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AMERICAN FORESTS

VOLUME 51 NOVEMBER, 1945 NUMBER 11

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CONTENTS

	Page
FOREST EXCHANGE	524
MY FAVORITE TREE—Helen H. Means	525
FRONTISPIECE—Wild Turkey, etching by Richard E. Bishop	526
EDITORIAL A Salute to Research	527
DEMOCRACY AND WILDLIFE By William H. Bayliff	528
WHERE WILL EUROPE GET ITS LUMBER? By Arthur Bevan	532
AN AMERICAN FORESTRY CONGRESS	535
MOUNTAIN WATER FOR THIRSTY LANDS By H. G. Wilm	536
HOW TO PLAN AND MAINTAIN A MEMORIAL FOREST	538
JACK PINE—THE TREE THAT SWALLOWS ITS OWN CONES By William M. Harlow	543
MAPLE SUGAR OR MAPLE LOGS? By John B. Woods	544
WATER, SCENERY AND CROSSTIES By J. C. H. Robertson	548
HOW TO KILL A WILDERNESS By Lt. David R. Brower	551
THE GOVERNOR PLANTED TREES By Charles S. Walters	552
JEFFREY PINE—Tree Series By Warren D. Brush	554
TREE TRAILS—Big Pines	556
FORESTRY FOR FUTURE FARMERS By Robert N. Hoskins	558
AROUND THE STATES	560
PIPELINE OF PANDAN By Capt. William H. Lambert	564
THE CONSERVATION CALENDAR	568
BOOKS AND PUBLICATIONS	570

THE COVER
Giant Raft
Photograph by courtesy of the West Coast Lumberman

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American Forests

Published monthly by

THE
AMERICAN FORESTRY
ASSOCIATION

919 Seventeenth Street
Washington 6, D. C.

The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

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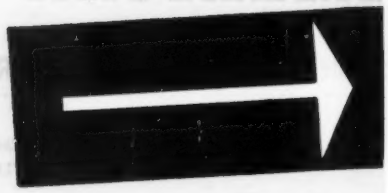

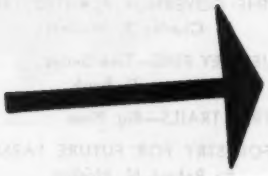

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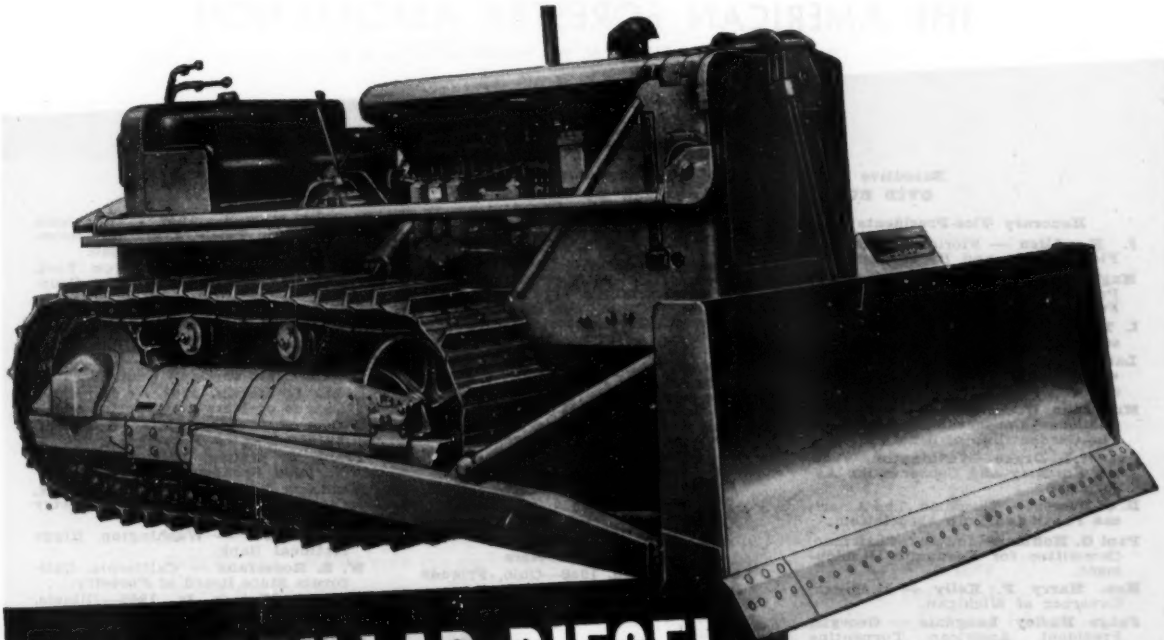

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THE FOREST EXCHANGE . . .

What to Do About Tillamook?

SIR: The Wilson River fire, some 60 miles west of Portland, is now quiet, after covering around 100 thousand acres, more or less. This is in the old Tillamook burn which in August, 1933, covered 250 thousand acres, killing 10 billion feet of timber. Since then, the burn reburned in part in 1939, and again in 1945. While half the original timber stand has been logged, and while the recent burn has not caused much loss of timber, still it does bring into prominence several trends.

The burn illustrates anew the potential danger in an old burn, at least in one *not* coming back to timber. I was through the area of the burn several times in 1942 and saw no reproduction, nor, for that matter, in the old logged-over lands adjacent to the burn.

The U. S. Forest Service reports said some reproduction was coming in, but the Wilson River road covers 40 miles of the burn, as does the Wolf Creek road, and from both not one acre of green reproduction could be seen in 80 miles of travel. It was nine years after the original burn that I went through the area. If natural reproduction was taking place, surely in nine years one would see the green spike of a fir somewhere in the area.

I do not believe the burn was reproducing; nor, since most of it is from 10 to 20 miles from green timber, do I believe it will reproduce naturally within 50 years.

Yet the policy of the lumber associations seems to be that all that is necessary for the advancement of forestry on the West Coast is for the government to keep hands off. In this attitude, the operators apparently draw no line between state or federal government, nor between action on valuable growing land on which tree farms can succeed, and the several million acres of barren burns in the Northwest.

Estimates as to timber loss in the Northwest run around a conservative two billion feet a year from the burns alone. However, the value is greater than apparent since most burns are on the more accessible lands on which timber is closer to market than in the national forest areas.

Those of us who live in the Northwest hope that victory will not mean that a conservative forestry policy will boil down to doing nothing. We question whether it is cheaper to keep the old burns an idle eyesore subject to frequent bad fires or to replant and have a growing forest.—*Howard Rogers*, Portland, Oregon.

On Forestry Education

SIR: Your editorial of September is very much to the point. People will procure what they want if they want it badly enough. They will not always know what they need or want, except through education (information as to the value of the thing). Foresters must

(*Turn to page* 574)

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My Favorite Tree

By HELEN H. MEANS
President of the Girl Scouts

MY FAVORITE TREE is the aspen. Probably I should say my favorite trees, for never can I remember seeing an aspen standing alone. Here in our Rocky Mountains they are both prolific and sociable. They spring up from seed broadcast by the wind, grow quickly and, before you know it, an entire mountain slope is covered with a grove of these slender trees. There they stand offering protection to the slower growing conifers and when that purpose is achieved either the heavy winds crack their soft wood or they die a natural death. It is a brief but useful life.

But while they live they are both beautiful and gay. Smooth pale green bark covers their slender youthful trunks and what gives them their other name, "the quaking asp," is that even the slightest breeze flutters their delicate leaves. To me they do not quake. Rather they whisper and dance all day long, a joy to see. Their real beauty is attained in the fall when these same dancing leaves turn a golden yellow and light up the dark green of the firs on the mountain slopes.

Yes, our aspens are useful, they are beautiful and they are gay. That is why I like them.

WILD TURKEY

Etched by Richard E. Bishop, in "Bishop's Birds" — published by J. B. Lippincott and reproduced by special permission of the author and publisher.

Thanksgiving

Thanksgiving Day was the first holiday, chronologically, in New England's history. The first record appears in the family Bible of William White, the Pilgrim, and gives the date as December 20, 1620 —"We meet for prayer and thanksgiving." There is no record of a feast until a year later, when the return of seed-time and a good harvest featured feasting as part of the celebration of the festival. *Mourt's Relation* chronicles it as follows:

> "Our harvest being gotten in, our Governour sent foure men on fowling, that so we might after a more speciall manner rejoyce together, after we had gathered the fruit of our labours; they foure in one day killed as much fowle, as with a little helpe beside, served the Company almost a weeke, at which time amongst other Recreations, we exercised our Armes, many of the Indians coming amongst us, and amongst the rest their greatest King Massasoyt, with some ninetie men, whom for three days we entertained and feasted, and they went out and killed five Deere, which they brought to the Plantation and bestowed on our Governour, and upon the Captaine, and others. And although it be not alwayes so plentifull, as it was at this time with us, yet by the goodnesse of God, we are so farre from want that we often wish you partakers of our plentie."

It is generally believed that this picturesque account is of the first autumnal Thanksgiving in New England, which was the inauguration of the custom in America.

EDITORIAL

A Salute to Research

WHEN historians get around to immortalizing the scientific and technological genius that helped this country emerge victorious from World War II, they will devote a long and stirring chapter to the U. S. Forest Products Laboratory. For behind the closed doors of this great research center at Madison, Wisconsin, were conceived and developed the major techniques and processes that earn for American wood a five-star rank in the defeat of Germany and Japan.

If this is stating the case with a dash of heroics, it is because we feel that way about Madison's house of wood magic after witnessing on October 11 the unveiling of some of its war secrets. One does not stand unmoved in the presence of achievements that border on the fantastic — winged boxes that can be dropped from the air without parachutes, for instance. Nor can one fail to measure in terms of battles won and lives saved accomplishments in packaging research that resulted in reducing damage losses in the shipment of war supplies from *fifty to three percent.* What this meant to the troops who fought their way up the Italian peninsula and across France to Berlin, and from Guadalcanal and Iwo Jima to Tokyo, is a matter of simple arithmetic.

But this is only part of the packaging story at Madison. By designing more compact boxes and crates, laboratory research scientists and technicians saved enough cargo space to transport in four ships supplies that had previously required five. To illustrate merely one instance, they designed a crate for the 40 millimeter anti-aircraft gun that reduced shipping space by 5,000 gross tons a month. And it is not incidental that this overall program resulted in the saving of a billion board feet of lumber at a time when the nation was critically short on war supplies of forest products.

Thus, if research at Madison had accomplished nothing more than efficient packaging, it would have justified a full-scale salute from a grateful American people. But packaging was but one phase of the laboratory's many-sided war program. As a spokesman put it:

"Forest products research at the laboratory began with the problems that beset the loggers and sawmill operators deep in the nation's forests and switched from them to the lumber mills, pulp mills, box factories, aircraft plants, furniture makers, adhesive manufacturers, shipyards, freight terminals and overseas to the very fringes of the battlefronts. In all of these, the helping hand of the laboratory was evident at some time during the war—introducing new methods and materials, helping to break production bottlenecks, assisting in the selection and use of materials, advising on design and fabrication problems, and helping to eke out supplies by cutting down waste and suggesting substitutes of adequate quality."

This modest statement reveals only indirectly that war research at Madison brought into existence improved woods which the world soon will know under strange new names such as "compreg" and "staypak." Millions of dollars worth of compreg—wood compressed and impregnated with resin, and harder and more durable than most metals—were produced during the war for airplane propellers and radio aerial masts. Staypak, compressed but containing no resin, is twice as tough as compreg though not so water resistant.

But it is an amazing paper product called "papreg" that captures the imagination at Madison. Sheets of paper are treated with resin, subjected to intense heat and pressure, and emerge a hard, shiny product of such great strength that it was widely used during the war in the manufacture of rocket firing tubes and turret assemblies for bombers. On a weight basis its tensile strength is comparable to that of aluminum.

Another outstanding paper achievement is a fiberboard shipping container made entirely out of wastepaper. Soaked in water for 45 days, it emerged much stronger than other fiberboards soaked for only two days. Its great value in amphibious operations is obvious.

This list of products and processes that helped the nation make its critically short supplies of wood fight more effectively could go on indefinitely:

Lamination—the gluing together of relatively thin boards—of ship timbers; high frequency heating for quick and uniform drying of laminated products; moulding of plywood in bags for curved skin surfaces of aircrafts, such as wings and fuselages; instruments to detect hidden defects in wood; products of incredible lightness and strength achieved through "sandwich construction"; plastics that prevent corrosion in long-term outdoor storage; lignin-filled paper plastics; processes to prevent decay and discoloration in wood; new glues and gluing techniques; alcohol production from wood waste in one-eighth of the time required by the German Scholler process; high-grade paper from hardwoods in place of the favored softwoods.

All of this adds up to one conclusion. Given the demand, American scientific and technical genius can open new and wider fields in wood utilization. By processes and methods already known or still being explored, products of the forest can be made more serviceable, more enduring. And for the betterment of our timberlands if we proceed intelligently. For wider utilization will contribute greatly toward making the growing of forest crops on commercial forest land and farm woodlots self-supporting, essential to practical forest management. And new processes and methods materially reduce waste both in the woods and at the mills.

Looking ahead, it might profitably be recognized that as we pass into a new and in many respects incredible era of wood utilization, we leave behind many old concepts and practices that have ruled our thinking and planning in the management or mismanagement of our forests. When we rewrite these policies and practices, as we must, it would be a major triumph for American forestry if we emulate the high level of achievement reached by the men of Madison.

A beautiful copper engraving by Ridinger of the Virgin Forest, as the artist visioned it before the introduction of the Forest Laws, when the game belonged to the captor

Democracy and Wildlife

Wherein the Laws Concerning Both Are Explored

By WILLIAM H. BAYLIFF

IN present popular opinion the term "law" often signifies merely a body of prohibitions, most of them trifling, together with the judicial machinery, generally ridiculous, for enforcing these prohibitions. Though we vaguely connect law to government, even this circumstance hardly serves to dignify it; and few synthesize law, government and our political ideas or ideals into a single system.

But there have been periods in western civilization when the law had a broader significance; periods when men thought of their social and economic problems as legal problems. Then the law was not merely a means to legal justice, but was the tangible embodiment of all social and political thinking. It supplied a basis for moral, economic, political and legal conduct; in principle it embraced the highest organic laws, the broadest political and ethical theory, and the very constitution and nature of the state itself.

If law has often expressed the social and political philosophy and guided the behavior of man, then it will embody in a large measure his attitude toward any part of his environment. With such an assumption, it is profitable to examine some of the laws in classic, English and American history, and to inquire into the philosophy embodied in those laws as they relate to wildlife.

For this purpose, the first laws concerning wildlife are those embodied in Justinian's code, 528 A.D. In Book II of *The Institutes*, we find:

". . . now let us proceed to the law of Things . . . for some things are by natural law common to all, some are public, some belong to society or a corporation, and some belong to no one. . . .

"Thus the following things are by natural law common to all—the air, running water, the sea, and consequently the seashore . . . all rivers and harbors are public so that all persons have a right to fish therein.

"Wild animals, birds, and fish, that is to say, all creatures which the land, the sea, or the sky produce, as soon as they are caught by anyone become the property of their captor by the law of nations; for natural reason admits the title of the first occupant to that which previously had no owner."

It will be seen at once that the Justinian Code has here placed wild animals, birds and fish in their free state in that category of things which belong to no one; that is, they are not property at all until reduced to possession when they belong to the captor. Furthermore, such wild animals, birds and fish are open to capture by anyone having the power to take them. Such legal system placed no restrictions on hunting, fowling, or fishing except as the trespass laws restrained those seeking game, fowl, or fish from entering the lands of another.

Properly speaking, Justinian's code as far as wildlife was concerned was an anarchy; that is to say, wildlife had no privileges, rights, or protection guaranteed by the state.

With the decline and dissolution of the Roman Empire, legal development seems to have remained at a standstill for some centuries. At any rate, the next concern here should be with the legal status of wildlife in England under the Norman kings. After the Battle of Hastings in 1066, William the Conqueror was fully occupied for some years in establishing his conquest. Directly this was accomplished, his personal tastes and habits were promptly reflected in his concern for the game of the country. One of William's first peacetime acts was to initiate a series of enactments which his successors carried to completion, and which were known from the time of William as the Forest Laws. By these laws vast areas were depopulated and set aside for the royal sport of the king and his lords. An old Anglo-Saxon chronicle describes these acts and these tastes of the king:

"He made great forests for the deer, and passed laws for them that whosoever killed a hart or hind would be blinded. As he forbade the killing of deer, so also did he forbid the slaying of boars; and he loved the tall deer as if he were their father."

The term "forest" as used here was not merely a woodland, but took its meaning from the Latin as any territory "outside" or "abroad" from the land tilled or grazed by the landholder. In purpose and in fact, the forests which the king "made" were vast game preserves. They were described by Manwood in 1717, in *Treatise of the Forest Laws:*

"A forest is a certain territory of woody ground and fruitful pastures, privileged for wild beasts and fowls of forest, chase, and warren, to rest and abide there in the safe protection of the king, for his delight and pleasure . . . and also replenished by wild beasts of venery or chase, and with great coverts of vert, for the succor of said beasts there to abide; for the preservation and continuance of which said place, together with the vert and the venison there are particular officers, laws, and privileges belonging to the same, requisite for that purpose, and proper only to a forest and no other place."

To a people closely dependent on the soil and woodlands, these Forest Laws were a severe blow, not only because the public was dispossessed of grazing and agricultural privileges, but because in game it lost an important source of food. Furthermore, while continental peoples had been accustomed to considering the game as belonging to the king, the English had always enjoyed hunting on their own land, and now the loss of this privilege must have seemed to them the gravest injustice.

William's immediate sucessors did little or nothing to ameliorate the Forest Laws which in fact were game laws. In 1184, Henry II, who was an indefatigable hunter, issued a formal forest code, the *Assize of the Forest*, and established forest courts and foresters to police these royal game preserves. Perhaps the best view of the effect of these royal decrees can be seen from an extract from a version of the Robin Hood stories quoted by R. H. Connery in *Governmental Problems in Wildlife Conservation:*

(Forester to Robin Hood): "'Knowest thou not thou has killed the King's deer, and by all the laws of our gracious lord and sovereign, King Harry, thine

ears should be shaven close to thy head?'

"Robin Hood lay hidden in Sherwood Forest for one year and in that time gathered around him many others like himself, cast out from other folk for this cause or that. Some had shot deer in the hungry winter time, when they could get no other food, and had been seen in the act by the forester, but had escaped, thus saving their ears. Some had been turned out of their inheritance that their farms might be added to the King's land in Sherwood Forest. All for one cause or another had come to Sherwood to escape wrong and oppression."

The "truth" of the Robin Hood stories in the usual meaning of truth hardly matters. They were true in setting and circumstances, and they were true also in that Robin Hood represented the hero of the common man with his long bow in the same way that King Arthur in armor was the hero of the wealthy and genteel. Furthermore, it was true that during the reigns of Richard I, John and Henry II the Forest Laws reached their most odious state, and hence were proper subjects of such oblique condemnation as found in the Robin Hood ballads.

Two things are now clear: first, that wild animals which in Justinian's code belonged to no one, were now considered as belonging to the king; and second, that the king practiced a form of conservation, though these conservation measures appear to be framed rather for the pleasure of the king than for the good of the deer.

These were substantially the conditions on June 15, 1215, when the barons forced upon King John at Runnymede the famous Great Charter. This document was re-issued in the following year by Henry III, and still again in 1217. This third Charter, that of 1217, contained the famous *Foresta Carta*, or Forest Charter, and was the issue to which the people always thereafter appealed. The Forest Charter did not substantially alter things, though it did bring certain reforms which constituted a triumph for the people. Previously the forests had had indefinite boundaries which the forest courts had interpreted to the advantage of the crown. These boundaries now became fixed, and were in a number of cases actually contracted. The forest courts were also restricted and were purified in some degree of their most flagrant frauds.

From this time onward to the beginning of the 19th century the forest and game laws continued in effect, and poaching continued to be a common crime despite the severity of the laws. Shakespeare is said to have been charged with the same crime as that committed by members of Robin Hood's band. Blackstone in *Commentaries on English Laws*, stated the rational basis of game laws as follows:

"In the first place, then, we have shown, and indeed it cannot be denied, that by the laws of nature every man, from the prince to the peasant, has an equal right of pursuing and taking to his use, all such creatures as are *ferae naturae*, and therefore, the property of nobody, but liable to be seized by the first occupant. And so it was held by the Imperial Law even so late as Justinian's time . . . but it follows from the very end and constitution of Society, that this natural right, as well as many others belonging to man as an individual, may be restrained by positive laws enacted for reasons of the State, or for the supposed benefit of the community."

Having thus stated that hunting and fishing may be restrained by laws, Blackstone, in *Idem*, also states: "No person whatsoever but he who has derivative right from the crown, is by common law entitled to take or kill any beasts of chase or any game whatsoever."

All restrictions suggested thus far have referred only to what might be called, rather loosely, game. Other forms of wildlife were therefore still the property of no one. Again quoting Blackstone:

"With regard to animals *ferae naturae* all mankind had by the original grant of the Creator a right to pursue and take any fowl or insect of the air, any fish or inhabitant of the waters, and any beast or reptile of the field; and this natural law still continues in every individual unless where it is restrained by the civil laws of the country. . . . The restrictions which are laid upon this right by the laws of England, relate principally to royal fish as the whale and the sturgeon, and such terrestrial, aerial, or aquatic animals as go under the denomination of game. But those animals which are not expressly so reserved are still liable to be taken and appropriated by any of the king's subjects, upon their own territories; in the same manner as they might have taken even the game itself; till these civil prohibitions were issued; there being in nature no distinction between one species of wild animal and another."

Considering the two political extremes reviewed thus far, how did the game fare? Clearly, where wildlife belonged to no one, where it occupied a space outside the realm of governmental concern, and was subject to exploitation by everyone, it could not but suffer in proportion to the number and ingenuity of hunters and fishermen. In the case where property in game rests in the crown, the game, like men, prospered in proportion to the benevolence of the monarch. Undoubtedly, the game laws of England served to preserve and protect the game, but undoubtedly, also, their chief aim was not the game, but the pleasure of the crown; the conservation practiced was only to simplify exploitation of the same animals. Again, these circumstances gave the king two realms or states, that of his human subjects, and that of game animals. The human state was forbidden to molest that of the game and called such laws harsh and unjust. Though Blackstone is concerned rather to expound the law than to criticise it, he himself expresses a sober judgment:

". . . The only rational footing upon which we can consider it (the killing of game) a crime, is that in low and indigent persons, it promotes idleness, and takes them away from their proper employments and callings: which is an offense against the public policy and economy of the commonwealth."

William Feildon Craises, in *Game Laws*, in the Encyclopedia Britannica, finds also that the game laws were: ". . . Framed for the preservation of deer and game for the recreation and amusement of persons of fortune, and to prevent persons of inferior rank from squandering in pursuit of game time which their station in life required to be more profitably employed."

While Blackstone was expounding the English game laws, the colonies in America were finding the constitutional system of the mother country increasingly galling, and before the famous Commentaries had gone through a second edition, a new state had been born. Though English law became the basis of nearly all American law, it is not surprising that the game laws should be neglected in this country.

In the first place, America appeared to be a place where game occurred in sufficient abundance for everyone; and in the second place, neither the circumstances of the times, nor the special conditions surrounding the formation of the Union favored a continuation of the old political privileges of European states. Phrases like "Liberty," "Freedom" and "Equality" were in the air, and there was no disposition to set up in this country any sort of nobility, even in such privileges as hunting.

Pennsylvania, in 1776, and Vermont, in 1777, placed in their constitutions the liberty to "fowl and fish" as privileges of all citizens. However, with the rapid growth of population and the improvement of firearms, there was a rapid diminution in wildlife, particularly of game. Therefore, the older states very

early felt impelled to restrict the indiscriminate taking of wildlife, and particularly to restrain professional hunters. There were, of course, two possible sources of authority for these restrictions, the federal government and that of the states themselves. While that of the federal government is not negligible, it is nevertheless "delegated" authority, and of more limited scope than that of the state game laws. The political philosophy behind these laws is aptly expressed in a Minnesota Supreme Court decision quoted, in part, as follows:

"We take it to be the correct doctrine in this country that the ownership of wild animals, so far as they are capable of ownership, is in the state, not as proprietor, but in its sovereign capacity as the representative and for the benefit of all its people in common."

Thus we pass into a third phase of political theory regarding the ownership of wildlife, a phase in which the wildlife is still the property of the sovereign, but where the game as well as the sovereignty has devolved upon the whole people. Such public ownership requires that if wildlife is to be preserved, then the obligation for such preservation rests also on the public. So long as the game belonged to no one, no such obligation should exist; so long as it belonged to the king, it was the business of the king to preserve and husband wildlife; but when the public became proprietor of game, the public had a civic obligation to preserve it. Whether public management of wildlife is efficient and how it has been carried out is more properly a subject for another inquiry.

Throughout the history we have followed here animals have had no political status. In other words, they have been property. In the ancient Greek and Roman states, most men were also property, and Aristotle not only justified slavery, but could not conceive of a state without that institution. With the birth and maturity of democracy, the rank of mankind has gradually improved its political lot until "liberty, equality, and fraternity" are coming to be worldwide. But through all these political achievements of the common man, wildlife has remained for 25 centuries still the property of man, and we still largely accept the Mosaic attitude toward wildlife, as expressed in *Genesis:*

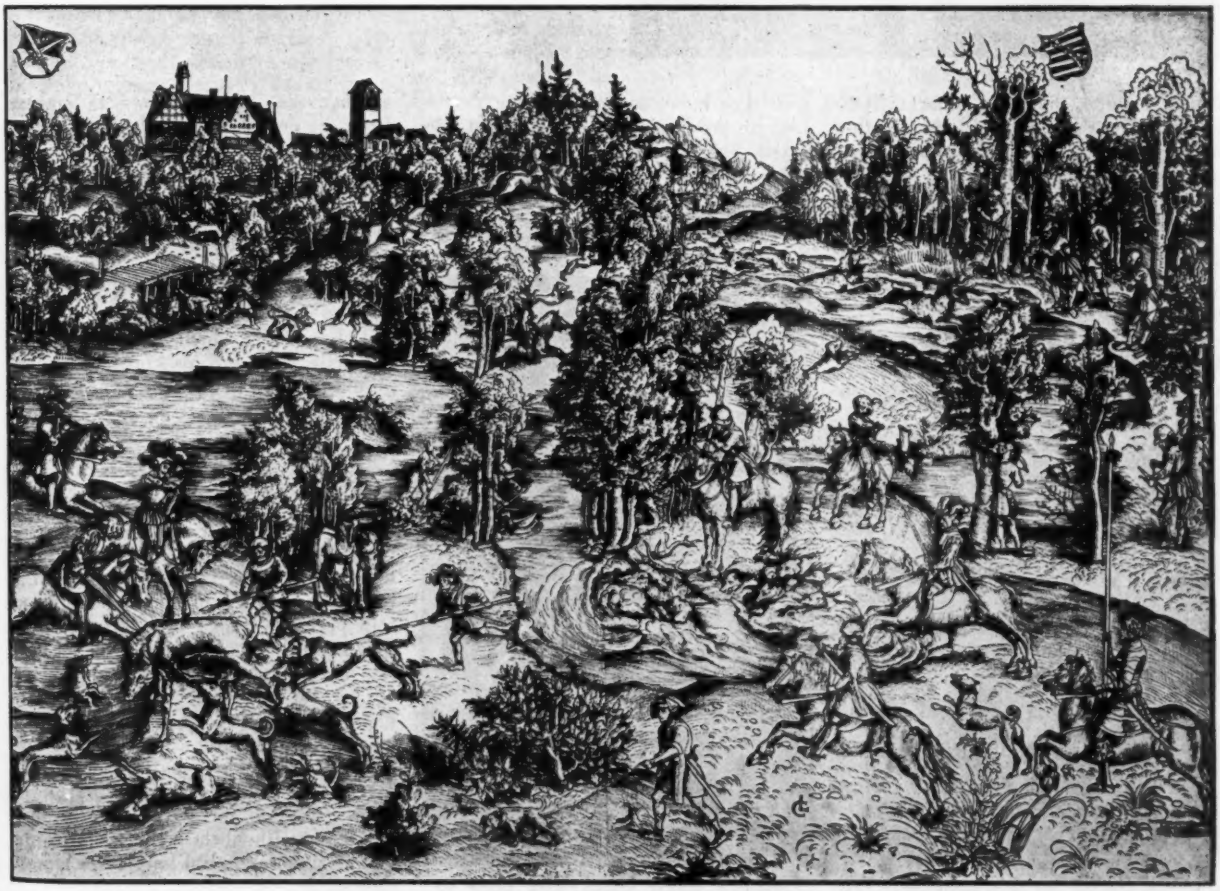
"And God said, let us make man in our image, after our likeness; and let them have dominion over the fish of the sea, and over the fowls of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth over the earth."

Man has achieved democracy for himself, but maintains a property right in, and a dominion over, wild animals.

While this is the prevailing attitude, it is not universal. Scattered through the history of English and American thought are numerous doubts and criticisms of this Mosaic view. There are numerous suggestions that man's dominion over animals is an error in the body politic. Robert Burns, as a farmer associated intimately with animal life, in 1785 was impelled to write in "To A Mouse . . . *On Turning Her Up In Her Nest With the Plough:*

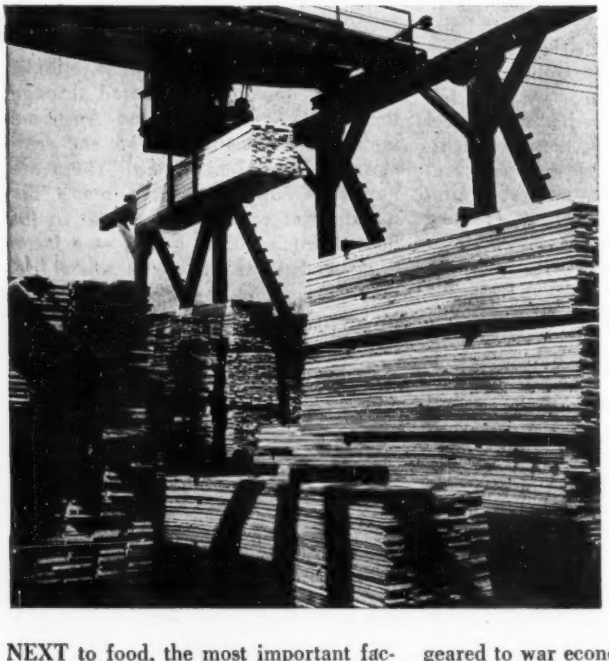
"I'm truly sorry man's dominion
Has broken Nature's social union
An' justifies that ill opinion
Which makes thee startle
At me, thy poor earthborn companion
An' fellow mortal.

(*Turn to page* 576)



The Great Stag Hunt, *after* the enactment of the Forest Laws, which set aside vast areas for the royal sport of the king and his lords,—as drawn by Lucas Cranach

WHERE WILL EUROPE GET ITS LUMBER?



A First-Hand Report on Immediate Reconstruction Needs of the War-Damaged Countries and the Ability of European Forests to Meet Them

By ARTHUR BEVAN

NEXT to food, the most important factor in Europe's health and morale this winter will be lumber and other wood products. At the moment, no one can say with certainty just how many homes, factories, business establishments and other structures have been destroyed or damaged by bombing and ground fighting since Hitler moved on Poland in the fall of 1939. But competent observers believe that the number will run into many millions. The United Kingdom alone lost a million homes destroyed, three million damaged.

Thus if widespread suffering and tragedy are to be averted, Europe's homeless legions must be sheltered before the frigid blasts of winter settle over the bombed and war-damaged continent. Warehouses, factories, power plants and mines must be rebuilt or repaired. Bridges and transportation facilities must be restored. This means enormous quantities of lumber and timber, mine props and railway ties. And it means fuelwood, perhaps in greater quantities than the continent has ever before known, for until coal is again produced and moved in prewar tonnages, only wood can bake Europe's bread and warm its hearthstones.

The question is, of course, can Europe get the lumber and other wood products needed for this immediate job of reconstruction and repair?—and from where? That European forests, geared to war economy and long victimized by the Nazi, have suffered must be taken for granted. Forest industries have been dislocated, in many cases wiped out. And facilities to transport important supplies from one plant to another are just beginning to emerge from the devastation of allied bombing.

Finland's forest losses have been so great that she is able to export but one-fourth of her prewar shipment

The writer cannot answer this question fully—at least not at the present time. But as the result of several months recently spent in Europe attempting to analyze the situation, he is in a position to report conditions as he observed them, as European foresters believe them to be, and as revealed through official channels to which he had access.

Briefly, here are his conclusions, beginning with the present condition of Europe's forests and their ability to contribute to immediate reconstruction and rehabilitation needs:

The forest resources of the United Kingdom are practically exhausted. The degree to which Britain sacrificed her forests in order to wage war is clearly illustrated by the fact that prior to the war home grown production provided four percent of her consumption whereas during the war she stripped her forests and shade and park trees to produce 65 percent of her requirements. Perhaps the lumber, timber and particularly pitprops produced from her forests were one of the major factors that saved her. Shipping could not have been spared to import such large tonnages and without them the manufacture of war supplies would have been almost impossible.

It is true that drastic control reduced consumption and channeled timber to

war uses, but still the sacrifice was tremendous and the forests of Great Britain have been decimated to a far greater extent than any other combatant country. It will be decades before British forests can be restored to a point where they can produce even the small percentage of her prewar consumption.

Although France had little opportunity to use her forest resources for defense, they played an important role during the period of occupation in Germany's war economy. Despite this, French reports indicate that damage was not severe. Certainly they did not appear too badly damaged when viewed by the writer from the air. There was considerable overcutting in readily accessible areas, but no evidence of destructive cutting. Silviculturally, the forests should be capable of restoration to prewar conditions in a decade or two. Officials reported that extensive areas of the Landes pine forest, in southwestern France, were burned, some intentionally by the Germans to drive out the *Maquis* who were very active in that region. One figure has it that 15 percent of this pine area was so destroyed.

If the American zone of occupation is any criterion, the war has had very little effect on Germany's forest. In general, her forest resources are intact. On a flight from Paris to Frankfort it is not difficult to determine when one crosses from France into Germany. French forests show the overcutting and the stand is obviously thin. In Germany the stands have no such appearance and give every evidence of careful management. Indeed, the only sign of neglect to the eye of a forester is that some of the younger stands need thinning. Perhaps one answer to this condition is a report that while German foresters were ordered to increase cuttings, actually they adjusted their figures on forest increment so that felling was really about normal.

Norway, as far as her forests are concerned, came out of the war in good shape. There were cases of destructive cutting in readily accessible areas, but these were limited in extent. The Norwegians successfully sabotaged production of the lumber products quotas placed on them by the Germans. According to reports, only 25 percent of these quotas were ever delivered. From all evidence, the forest capital stock of Norway is greater now than before the war.

As a neutral, Sweden has preserved her forest resources intact. Under government regulation there has been no overcutting. It is reported that because of the demand for pulpwood and fuelwood, cuttings during the war were heaviest in the younger age classes, which would mean an increase in standing timber suitable for lumber.

Finland's forest resources suffered severely. In the first place, she lost to Russia her best forest area in the Karelian Peninsula. Her transportation system was wrecked, her production facilities damaged and destroyed, and she must pay heavy reparations to the Soviet in the form of forest products. Finland will probably never regain her former position in the world timber trade.

Because of her vast forest resources, Russia has suffered very little. In the battle zones, of course, there was forest damage, but the war was fought largely in areas where forests were not extensive. Some reports indicate heavy cutting in readily accessible areas to meet the needs of the war. In the aggregate, however, such losses are insignificant when compared with Russia's total resources, and it must be remembered that Russia has gained substantial forest resources in the Baltic States, eastern Poland, the Karelian Peninsula and East Prussia, which would offset many times the losses which may have occurred within her prewar boundaries.

Poland lost the bulk of her forests to Russia, and damage to her remaining timber stands is reported as very severe and extensive. It is doubtful if gains in East Prussia and Silesia will offset these losses and whether Poland will be able to resume the place she once held in the world timber markets.

The Balkan countries, particularly Rumania, Yugoslavia and Czechoslovakia, which have important forest resources, are still an unknown quantity and no reports as to postwar forest conditions are available. Transportation systems have largely been destroyed and it may be some months before the effect of war on this important area is known.

With this brief review of the present situation in the important forest producing areas of Europe, the next step is to apply conditions to requirements and supply of timber for immediate rebuilding and reconstruction.

To begin with, it should be held in mind that almost every nation in the world has a housing and construction program sponsored by its government as a political commitment to its people —and with top priority. Such programs require large quantities of lumber and timber and will without question complicate the problem of the bombed and war-damaged countries of Europe in obtaining the lumber so badly needed this winter.

As previously mentioned, the United Kingdom had more than a million homes destroyed and other millions damaged during the six years of war. And during this period, of course, there was a complete cessation of building. Only very limited and essential repairs to

Some of the heavily damaged small nations, having little or no forests to draw upon, are looking to North America for the timber they need

minor damages were made during the war and having decimated her small forest resources, Britain must obtain large lumber and timber supplies from other countries. France, Belgium and Holland have a similar problem and, of these countries, only France can supply her needs from her own resources, and then only at the expense of further overcutting of her capital growing stock.

Norway, Sweden, Finland and Denmark, with the exception of the latter, can supply their own needs and will have surpluses to sell. Denmark has suffered little material damage but will need some supplies of lumber for deferred repairs and new construction which she will probably secure from Sweden.

Poland, which before the war was an exporting country, will need all the lumber she can produce. Her chief forester expressed his belief that it would be two or three years before Poland could again become an exporting nation. Even with the softwood forests of East Prussia, it is doubtful that she ever again will reach her prewar position in the world lumber trade.

The Balkan states have a tremendous reconstruction job and the political situation, added to the breakdown in transportation systems, is such that little if any supplies are anticipated from that source. A British Timber Mission is now in Yugoslavia exploring the possibilities, and more about the situation there will be known in the near future. But the outlook is not very hopeful. Russia is reported to be absorbing any surplus of timber available in Rumania. The same is believed to be true of Czechoslovakia.

Of the Scandinavian countries, Sweden has the greatest potential to meet the needs of war-torn Europe. However, her stockpile of lumber on hand on V-E day was absorbed immediately and was not sufficient by a big margin to meet requirements. Sweden has no indigenous supplies of fuel other than wood and must import coal and oil. Before the war she consumed from seven to ten percent of her wood production in the form of fuel. During the winter of 1944-45 she consumed 43 percent. She has obtained promises of about 50 percent of her coal and oil needs for the coming winter, but this means she still will have to consume about 30 percent of her wood production in order to keep warm. Production of lumber and forest products will be reduced accordingly in the coming year, and there is little hope of Sweden reaching her prewar export figure before 1947.

Norway has never been a large exporter of lumber, and while her sawmills and pulpmills were saved from destruction by the surrender of Germany, the end of the war found them seriously in need of repairs and replacements. And since V-E day found no supplies of logs on hand, it will be summer before appreciable production above her own needs can be anticipated.

One of the world's largest exporters of forest products before the war, Finland now is in desperate straits and cannot be expected to recover from the losses in forests and plants which she suffered. Russia exacted lumber and forest products as reparations, and until these are liquidated the most that can be anticipated from Finland is about 25 percent of her prewar shipments. Some observers believe even that figure is optimistic.

Before the war, Germany was one of the largest producers of lumber and forest products in Europe, even though she was a net importing country. How much lumber will be needed in Germany to meet minimum requirements is not known but with her forest resources pretty much intact, there is every expectation that considerable quantities of forest products can be supplied as reparations. In the British zone of occupation it is planned to step up production and about 100 portable mills previously used in the British Isles for home production are being moved in. A plan of operation is being drawn up and it is intended to overcut as a measure of reducing the capital growing stock.

In the American zone, which contains the largest portion of Germany's forested areas, no definite cutting plans have been made. There has been discussion but as far as is known no conclusion has been reached. It is proposed as a measure of disarmament to overcut through a reduction of the rotation periods set by the Germans. To date, however, as far as can be determined, no organization has been set up and no foresters have been included outside of a few officers in the Army of occupation who may have technical training. Action to date appears to extend only to getting sawmills back into production and a fuel cutting program to provide for local needs.

Considerable inventories of lumber were found in Germany following the surrender and it was estimated that this might amount to 350 million board feet in the American zone of occupation. The Army Engineers lifted a considerable portion of this for redeployment. However, no figures as to the actual amount so utilized have been given out.

The French are occupying the major portion of the Black Forest and have been actively cutting since they took over. Their problem has been one of transportation, but this is gradually being overcome. What policies the French are following in exploiting the Black Forest is not known. But the French are good foresters and no permanent damage to the stands is likely. Incidentally, 50 million feet of lumber were found in inventory when the French occupied the area.

As in many other matters, Russian activities and plans in connection with forest resources in their area of occupation are obscure. And since no overall policy for management of the German forest reserves has been announced by the Allied Control Council, considerable differences in the methods employed in the various zones are likely.

France, Belgium, Holland and the United Kingdom are hopeful they will receive considerable quantities of forest products from Germany as reparations. If this does not come about, there seems little possibility of these nations getting enough lumber to meet their most urgent requirements. France should be able to meet most of her requirements from her own production and the substantial amounts which undoubtedly will be secured from the Black Forest and from French West Africa. Belgium and Holland are not so fortunate. Having little or no forests of their own, these nations are turning anxious eyes to the Baltic, particularly to Sweden. But so many countries are looking to this source that there is small hope of securing even 50 percent of their needs. These small nations are therefore looking to North America to meet their prospective deficit. They have to have lumber and despite current financial difficulties are willing to pay cash for it.

The British have the largest program and expect to get a substantial slice of the Swedish supply, as well as of the relatively small amount the Finns hope to export. Efforts to get lumber from Russia have not been fruitful for the British, unless they have had recent success. The British therefore are regretfully turning to North America, regretfully because they must pay dollars, the commodity they have the least of. They expect to get a billion board feet from Canada and if they can possibly afford it or arrange the necessary finance, 500 million more of softwood from the United States during 1946.

Russia is the big imponderable and the key to the European timber situation. Russia is the only country to come out of the war with increased forest resources. Her boundaries as far as can be determined include areas which, before the war, contributed in excess of four billion board feet of timber to the world markets. On the other hand, she has the largest devastated area. Russia

(*Turn to page* 575)

AN AMERICAN FORESTRY CONGRESS

The American Forestry Association Announces Plan for National Conference Next Year to Formulate a Postwar Conservation Program

The Board of Directors of The American Forestry Association, meeting in Washington on September 17, voted to call an American Forestry Congress to formulate a postwar conservation program for the nation's 630 million acres of forest land. The congress will be held in September 1946, at Washington, in cooperation with national and state forest agencies and the forest industries, upon completion of the Association's Forest Resource Appraisal. Tentative arrangements have been made to hold sessions in the auditorium of the United States Chamber of Commerce.

This action is in line with an announcement made early this year that upon completion of the fact-finding survey all interested groups would be invited by the directors to participate in an interpretation of results and in the consideration of such action as may be in the best interest of postwar national welfare.

The Association's Forest Resource Appraisal has been in progress for the past 20 months in cooperation with state departments of forestry and federal and private agencies. When completed, it will provide a down-to-date and impartially arrived at determination and analysis of the country's forest resource situation after four years of total war. It will reveal how much timber there is in each state, its location, character and composition, and will bring into relief forest conditions currently prevailing and lines of constructive action needed to safeguard and develop the resource.

"On the basis of progress made to date," said W. S. Rosecrans, president of The American Forestry Association, in announcing the board's action, "the appraisal should be completed by the middle of next year, or shortly thereafter, at which time necessary information will be available with which to analyze the country's forest situation on the basis of conditions actually existing. It is the desire of the directors to implement this information into action along those lines which the inventory blueprints show to be necessary. We feel that here is a great opportunity for all elements of our national life to unite in developing postwar programs that will speed progress in meeting the country's future needs for raw wood and forest products.

"To this end, the Board of Directors has decided to call an American Forestry Congress, the primary purpose of which will be to consider the present national forestry situation. Qualified representatives from all forestry agencies, the forest industries, and from the general public will be invited to participate in a constructive effort to formulate an effective postwar forestry program which will have general support from national and state governmental agencies, forest owners and operators, and the public."

Mr. Rosecrans brought out that field survey work had been completed in 20 states, and that by the end of the year this number probably would be increased to 38. Reports already have been written for Arkansas, Colorado, Delaware, Indiana, Louisiana, Michigan, Rhode Island and Wyoming. Reports are in preparation for Arizona, California, Georgia, Illinois, Iowa, Maine, Missouri, New Mexico, North Carolina, Tennessee, Utah and Vermont. Soon to be written are reports for Massachusetts, Maryland, Montana, New Hampshire, Ohio, Oregon and Washington. By the end of the year, reports will be ready for Connecticut, Florida, Kentucky, Minnesota, New Jersey, New York, Oklahoma, Pennsylvania, Virginia, West Virginia and Wisconsin.

These state reports are being made available as soon as completed, Mr. Rosecrans pointed out. From the beginning of the project, he said, the directors of the Association have realized that the value of appraisal results will depend upon the extent to which they are made known and put to use in developing sound and improved policies of forest land management. Therefore, upon completion of work in a state, a preliminary report of appraisal findings is supplied the state forester who may request other local representatives of the public and of industry to join with him in considering the facts and formulating state plans and policies of action. Other agencies within the state, particularly those concerned with timber ownership, can with this information formulate intelligent management policies for their own land.

"But when the overall survey is completed and the nation-wide forest situation in relation to the different states and to the country as a whole will be clear," he added, "The American Forestry Association believes that national welfare can best be served by bringing together all interested groups for discussion. Through this democratic process the directors hope that common agreement and concerted action may be reached on the more important forest policies which current facts indicate to be called for in order to meet the country's postwar forest needs."

MOUNTAIN WATER FOR THIRSTY LANDS

How Foresters Are Attempting to Squeeze More Water from Tree-Clad Watersheds

By H. G. WILM

HOW about our water supply? Will there be enough to meet future developments in agriculture, industry, and other human needs? If not, how can we get enough? These questions are raised wherever men are planning for the postwar growth of American communities, and especially in the semi-arid western states where water is the most essential of all natural resources.

With water from its mountain watersheds, the West has built a thriving structure of rich cities and productive farms, but even now water shortages are beginning to hamper the full use of existing developments, and growth in future years will be decidedly limited by the amount of water available. In order to make their greatest contribution to national wealth, the people of the West will need all the water they can get. For this reason they are exerting every effort to organize the efficient use of water by developing available supplies and distributing them where they are most needed.

In their planning for future growth, western people realize the vital role played by forested mountain watersheds in supplying water. They are learning that nine-tenths of all the water produced in the Colorado River basin flows from the high watersheds of Colorado, Wyoming and eastern Utah, and is used as far from its source as southern California and Old Mexico; and that a large part of the water yields of the Arkansas River and Rio Grande and of the great Missouri River drainage system comes from these mountain ranges.

These people, thinking of present and future shortages, wonder whether their watersheds are now yielding as much water as possible. While they realize that man cannot alter the amount of snow and rain falling on the watersheds, they also know that only a part of this water reaches the streams. The forests themselves use a good deal of water, though in return they help prevent floods and hold the soil in place. In areas where floods and erosion present a serious hazard, this protective function of the forest is extremely important.

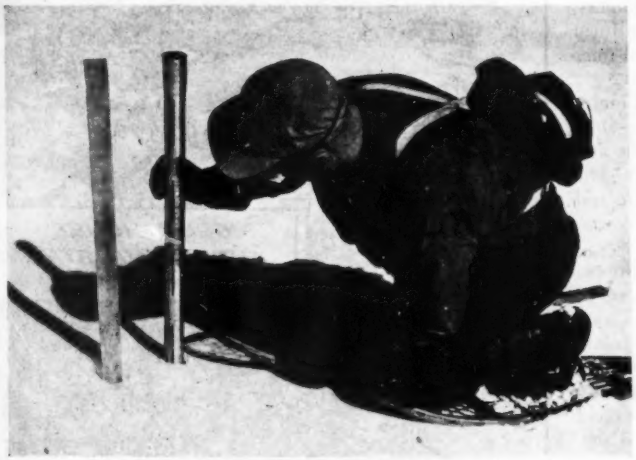
On many mountain watersheds of low flood hazard, however, the trees of virgin forests consume almost a third of the precipitation. Some is caught on the tree crowns and lost by evaporation before it can reach the ground, and still more is drawn out by roots and evaporated from the soil. Because this use by

While protecting the high watersheds, these forests consume nearly a third of the snow and water falling on them

the forests leaves less water for irrigation and other human needs, our people may logically ask whether available supplies can be increased by the harvesting of forest trees, and just how such harvesting can be done without risking floods or erosion.

As their contribution to the productive use of western water resources, an answer to these questions is being sought by men of the U. S. Forest Service, who manage a large part of these mountain watersheds for the benefit of the people. And these men, these researchers, are finding that timber harvesting on heavily forested watersheds will not only supply wood products for western communities, but may also increase water yields without risking floods or damaging the watersheds for other uses. Much remains to be learned about how and where such timber use may be applied; but even though it has to be confined to areas of low flood hazard, its benefits will help extend the horizon of future development based on water in the West.

At this experimental forest in Colorado Rockies (right), foresters are learning how to reduce water losses. Investigations have already shown that well-planned timber cutting (lower right) on densely forested watersheds makes more water available for streamflow



Intensive snow surveys measure the amount of water stored under virgin and cutover forests

HOW TO PLAN AND MAINTAI

A Step-by-Step Guide to One of the Simplest, and Certainly the Most Inspirational, Forms of Living Memorials

THROUGHOUT the ages, peoples of many races and nationalities have established memorials to their great—expressions of gratitude for unselfish devotion to the defense of their ideals. Customarily such memorials in the form of statues and monumental edifices, are made from stone or, in recent times, from metals and other lifeless material. Whether or not these types of memorials are pleasing to the senses is a matter of individual taste. Certainly they are cold and lifeless, no matter how stirring they may be. Because of this, another form of memorial is beginning to be employed to honor our beloved ones and our heroes—a *living memorial.*

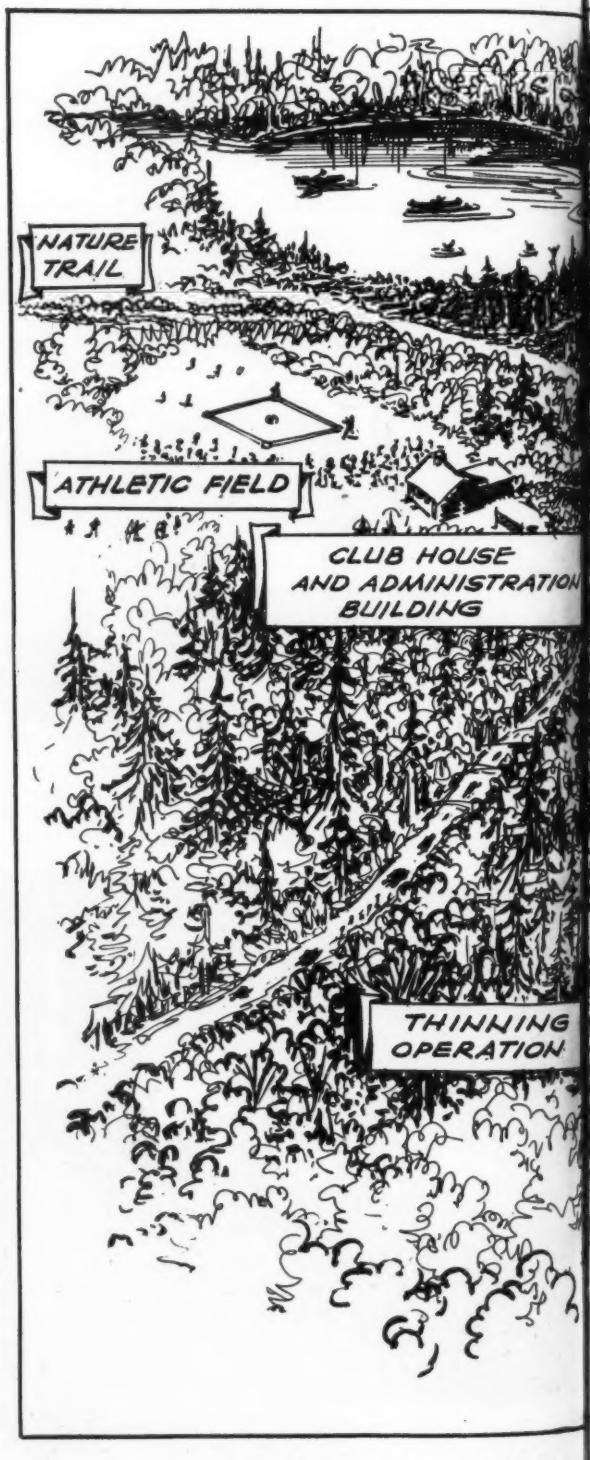
By this is meant all manner of useful projects to develop and maintain facilities that may be used and enjoyed by the people—such things as civic centers, forests, parks, hospitals, playgrounds and athletic stadia. This idea is being vigorously stimulated by The American Commission for Living War Memorials as appropriate and lasting recognition of the services rendered by men and women who served in World War II.

The American Forestry Association has given its full support to the living memorial idea, with emphasis on the establishment of forests as living tributes to the heroes of this war. From its long experience in encouraging the creation and development of community forests throughout the nation, it is well aware that there are many cities and villages where day-by-day human life can be greatly enhanced by conveniently located public forests. Public enjoyment of natural beauty and woodland playgrounds is always a sound reason for the establishment of such a forest. And it frequently happens that the cost of its development is ultimately written off, for well-managed forests can be made to pay their way through sale of wood products without impairment of recreation or other values.

Memorial forests may be large or small; they may represent considerable outlays or practically nothing in the way of initial cost. Often community or other public forests begin in a small way—as gifts of a few acres of land—and grow in time to large properties and important values. Such projects have the peculiar merit of flexibility; they may be simply groves of trees, or they may contain such special features as playgrounds and memorial structures. A forest may belong to a community or to an individual or a family, and as such may commemorate the regard held for a hundred citizens, or for a son, daughter, brother, or other loved one.

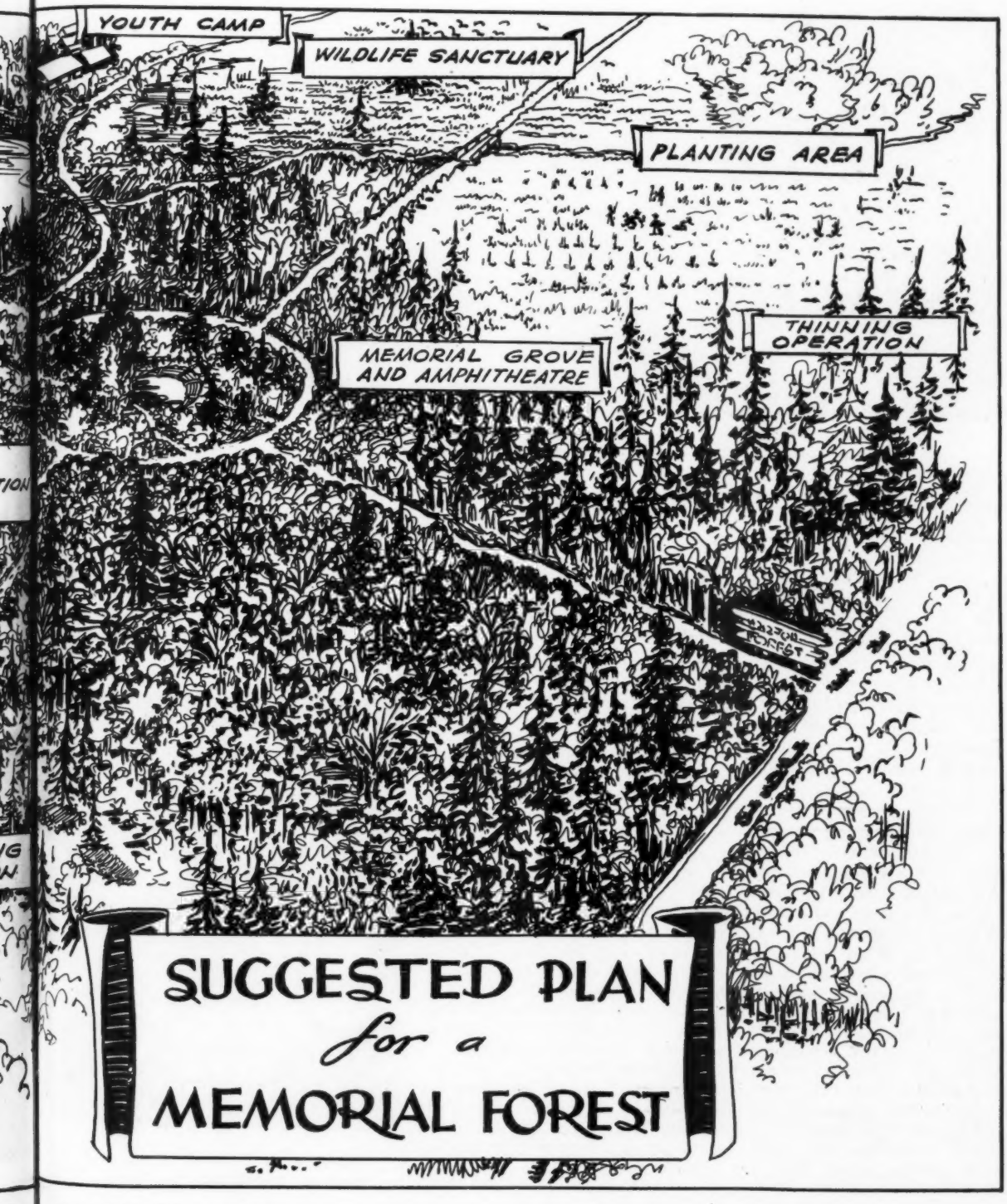
Everywhere in the country there is an urge to commemorate the services of men and women who went forth to defend and preserve our way of life, many of whom sacrificed their lives. And what can be more fitting—and sensible—than to combine this urge with the community forest idea? Such an opportunity is open to any individual, group, or organization.

It is to assist those sponsoring such a project that the following step-by-step guide has been prepared:



While the primary purpose of a Memorial Forest is to honor an individual or group, other objectives also can be served if it is properly planned and managed—beautification, timber growing and recreation, for example

A MEMORIAL FOREST . . .



A watershed forest such as this may serve not only to protect water supplies, but also as a Memorial Forest

WHAT KIND OF FOREST?

Clear definition of purpose is the first essential in the establishment of a memorial forest. While the primary purpose is to honor an individual or group, there may well be other objectives, due to the many values inherent in forests.

Is the secondary objective of sponsors to beautify the environs of their town or village?—to grow timber for local use?—to provide facilities for outdoor recreation?—to protect the watershed of their local water supply?—to establish a wildlife sanctuary?

A memorial forest, if properly planned and managed, can serve any of these purposes, or a combination of them—beautification, timber growing and recreation, for example. Or it may take the form of an arboretum; may provide shade and beauty for a veterans' hospital; may enclose and screen a municipal sylvan theater; may create a summer camp site for youth groups; may protect a town or city watershed; may provide an outdoor laboratory for the study of forestry, botany, geology, entomology and allied sciences. These are merely suggestive of the many ways living memorials of trees can be utilized for the welfare and enjoyment of citizens everywhere. Local conditions and needs should be the guiding factors. There is one factor, however, common and important to all types of tribute forests if they are to be *ever living* memorials and that is reasonable provision for their permanent maintenance.

In terms of sponsorship a war memorial may be a—

Private or Family Forest

Where individual property owners or families desire to establish a private forest to memorialize their sons and daughters, this type of forest is recommended. It may follow the pattern of dedicating a small grove of outstanding trees; or a tract of neglected or cutover woodland may be restored to beauty and productivity; or a new forest may be created by planting trees on old fields or marginal acres.

School or Church Forest

For student bodies and congregations seeking a means of perpetuating the memory of their war dead, forests of this character may be established. Whether acquired or created, a school or church forest may begin with as little as five acres—may serve a variety of purposes. A church forest, for instance, may provide an ideal setting for memorial services and for outdoor social activities. At the same time, if carefully managed, it may develop into an economic forest. The seventy-five acre church forest of Danville, New Hampshire, has provided a net income of $4.45 an acre for more than a century.

School forests have the same economic possibilities in adition to definite educational and recreational advantages. Teachers find ideal conditions for instruction in natural science. Graduating classes often welcome opportunities to make additions of land or plantations of trees as class gifts.

Watershed Forest

Some of the most useful forestry enterprises have been established by municipalities for the protection of their water supplies. The Pequannock Watershed Forest of Newark, New Jersey, now exceeding 35,000 acres, and the Cedar River Watershed Forest of Seattle, Washington, approaching 100,000 acres, are examples. This suggests that it would be both patriotic and profitable for water-using civil units—as well as private water companies—to establish and maintain watershed forests as ever-living war memorials.

Industrial or company forests are ideal for morale building outings

Industrial or Company Forest

Industrial or business organizations, large and small, may consider this means of memorializing employees lost in the war. A single forest, small or large, may be desirable for a firm with a single plant, but large corporations with scattered plants and holdings, may consider a series of forests of varying size.

The company forest offers an ideal spot for morale building outings—impromptu afternoon picnics in a nearby park or holiday excursions to a more distant woodland. Many manufacturing companies have long followed the practice of giving their employees such outings in public parks and recreation grounds. Ownership of suitable spots would simplify the problem and add to employee interest in and loyalty to the employing company.

Such parks or forests might be located near the plants to beautify industrial surroundings or serve as shelter strips. If forests are necessarily located at a distance, then the effort might well be to develop natural woodlands for contrast with urban conditions. Forest industries and forest landowners might wish to dedicate such areas, if extensive, as memorial tree farm units in the nation-wide tree farm system.

Community, City, or Town Forest

Through these mediums citizens may join together in honoring their boys and girls who served or gave their lives in the war. The pattern for successful forests of this type is well established in this country—and their multiple benefits proven. Size may range from a few acres to many thousand, depending on local stimuli and local conditions. Russell, Massachusetts, started twenty years ago with less than 100 acres; Manchester, New Hampshire, has a 4,000 acre community forest; the city forest of Westfield, Massachusetts, approximates 6,000 acres and Troy, Maine, has a large and profitable town forest. Here is excellent opportunity for civic and service groups, such as the Rotary, Kiwanis and other clubs and the American Legion, to sponsor living war memorials.

State or County Forest

Where it is deemed preferable to lodge responsibility for ownership and management in some local public agency, state or county forests are possibilities. They are feasible in states and counties having authority to acquire and manage forest land — and numerous states and counties have this authority. Such forests can often be started with tax delinquent lands. Whether acquired in this manner or by gift or purchase, it is always advantageous to select, if possible, areas of good second- or old-growth forests.

Memorial Forests provide beautiful settings for community, church, or school services and outdoor social activities

State forests are administered by state forestry or conservation agencies, county forests usually by their commissions or other regular county governments. These respective administrative heads should therefore be consulted before any plans are made for this type of memorial.

National Forest

Where the public interest warrants, the Secretary of Agriculture has authority to accept forest land donated for memorial purposes for inclusion in the national forest system. Areas of outstanding interest, especially suitable for memorials and well located for administration—in or near national forests—normally would be acceptable. Following World War I, and under sponsorship of The American Legion, an area of 3,000 acres within the Nantahala National Forest in North Carolina, was designated as the Joyce Kilmer Memorial Forest, in honor of the famous soldier-poet. In case such a memorial is desired, conditions of acceptance should be thoroughly explored in advance with U. S. Forest Service officials.

There are other forms of forests suitable for memorials: such as *Youth For-*

Well managed forests can be made to pay their way by the sale of wood products without impairment of other values

ests for Boy and Girl Scouts; 4-H Clubs and Future Farmers of America; *Federation Forests*, such as the General Federation of Women's Clubs sponsor; or *Association Forests*, such as may be sponsored by various conservation or other associations. The main consideration is that machinery for practical and permanent management of the areas be set up—and in this respect the pattern of management established by existing forests of the community, town or school type should be extremely beneficial.

ORGANIZATION

Committees

Having decided to establish a memorial forest project, the next step on the part of the sponsors is to organize the necessary committee or committees to carry it forward. In a small community, a small committee of prominent and especially qualified citizens may prove highly effective, but where a large number of people is involved, or where an expansive program is contemplated, a larger committee with appropriate subcommittees responsible for certain phases of the project may be desirable. For instance; sub-committees on: (1) Acquisition of Land, composed, when possible, of members who know land and forest values and who understand some of the technical aspects of forest management, to search out available sites and to procure options to purchase. (2) Publicity, headed when possible by a local editor, is necessary to keep the project constantly before the public. This is particularly true if it is proposed to purchase forest land with funds raised through public subscriptions. (3) Legal Committee, to draft local ordinances to confer and designate authority to manage and administer the forest and to look after such legal matters as examination of land titles, the recording of deeds, etc. (4) Financing, charged with the responsibility of raising and budgeting funds needed for promotion purposes and for the acquisition of land. There are numerous ways of raising funds, the most effective being by public subscription and by endowment.

Board of Managers

A permanent board to manage the memorial forest should be provided in the ordinance proposed by the legal committee, and its powers, functions and responsibilities clearly defined and established. It is obvious that such a board should be authorized to take such actions as are necessary for the protection and maintenance of the forest.

It should, among other things, have authority to plant trees, harvest timber, hire labor, and make constructive improvements. It should be authorized to receive money from the sale of forest products and concessions and to dispose of such receipts, either by applying them to the maintenance or development of the forest or by turning them into a community treasury. The ordinance should require the board to keep a permanent record of expenditures and receipts, improvements and operations. It should also require annual reports which when supplemented by photographs will constitute a historical record of the forest.

Experience has shown that boards function most effectively when members are elected or appointed to service without pay for a term of years, with terms of office staggered in order to insure continuity of management policy. These successful boards have been non-political and non-partisan, and made up of people of high civic standing who are willing to give their time and talents to promotion of the community welfare.

To stimulate the establishment of Memorial Forests, this step-by-step guide, prepared by the staff of The American Forestry Association, has been reprinted as an attractive two-color booklet. It is available at ten cents a copy, and will be mailed, prepaid, anywhere in the United States.—Editor.

The size of such a board will be governed by local consideration, such as giving proper representation to the various interested groups. In general, however, it will be found that small boards function better than large ones. A board of three or five members is recommended; seven may not be too cumbersome, although it probably will be found that a smaller number will actually do the work.

PLANNING

The success of a memorial forest project will depend upon how carefully initial plans are drawn and how faithfully and skillfully they are carried out. In approaching this question, sponsors should bear in mind from the outset that the foundation of forests as ever-living and serving memorials is planned provision for their permanent maintenance. The more this can be provided for in advance, through endowment or otherwise, the better. With sizable areas and skillful planning, management of parts of the forest for the production and sale of forest products can usually be made in time to support the memorial as a whole. Often this can be done at once, if the tract contains immediately available timber.

Memorial forest projects will normally unfold in two phases: first, organization and acquisition; second, establishment and use. In both phases informed, or better yet, professional guidance is desirable. For the organization and land acquisition, specially qualified persons should be secured to serve on committees. For management, trained foresters should be sought, as voluntary helpers, or, if the size of the project justifies, as paid employees.

Acquiring Land

Frequently it will happen that some interested individual or firm will give a piece of land as the beginning of a memorial forest. With such a start the committee can then seek other gifts of land or donations of cash for development or gifts of special facilities to become part of the property.

While such donors are more interested in commemorating service men and women than themselves, it is still a fact that suitable record of their generosity in helping to make the project succeed is proper.

In acquiring land it is necessary to decide first the kind of forest desired; whether city park or (city) suburban forest or a purely forest area, at some distance from city or town. Presumably the most advantageous selection would be a tract of several hundred acres, within easy access of the city, and thus readily available for educational, recreational and commercial use and development of the forest. Other choices might be: an in-town park, with special facilities for amusement and recreation, or a distant forest in a rural or even a wilderness area, where commercial management might be integrated with that of other private, federal or state forests.

Forests intended for public use and enjoyment should have water—streams or lake—or possibilities of lake development. If playgrounds and parking places are desired, the actual area of growing trees naturally will be reduced. As a measure of safeguarding the forest idea it would be well to stipulate in advance that at least 75 percent of the area shall be kept stocked with trees.

It may happen that open land is offered, to be added to forested areas. Such land can be planted with trees, making excellent projects for school children and arousing interest in forestry as well as in public service and the memorial itself. As a matter of good planning, it would be well to leave planting in abeyance until the forest unit is well established, unless the tract acquired is largely without trees and the first major need is to establish a new forest.

As a rule the initial investment in land will not be large. Gifts are most

(*Turn to page* 574)

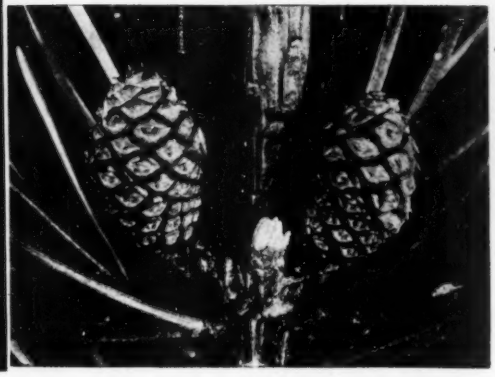
JACK PINE—THE TREE THAT SWALLOWS ITS OWN CONES . .

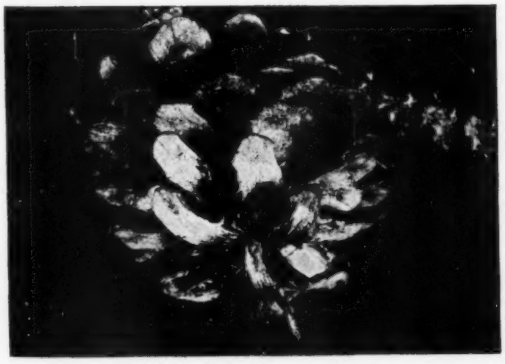
By WILLIAM M. HARLOW

A NATIONALLY-KNOWN landscape architect recently stated his belief that every structure or function in nature has some purposeful meaning, and that if we cannot see one, it is only because we still do not know enough about that particular structure or function. Although countless examples fortify this philosophy, occasionally something bobs up to tax one's ingenuity to explain on any such logical basis.

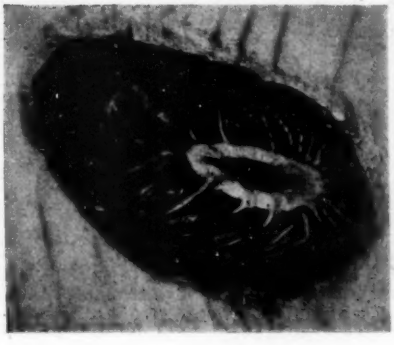
On the wind-swept sand plains of the Lake States, where the temperature may range from over 100 degrees Fahrenheit in summer to 50 degrees below zero in winter, there grows a hardy tree, jack pine, which is remarkable as well as common. According to early folklore, it poisoned the soil, and some people even considered it to be a "witch tree" and dangerous to approach closely. The fact that jack pine is usually found growing on the poorest of sandy sites may have been responsible for the first idea. If so, the tree has been mistakenly maligned since its value lies in its ability to cover areas too poor for other conifers. Resembling lodgepole pine of the West, jack pine produces cones at an early age, sometimes even when it is only two or three feet high. As a pioneer seed, such a youngster may have parachuted to earth in the midst of a vast expanse of bare sand, and now it is as though it felt lonely and exposed in its desolate surroundings and was in a hurry to beget companionable offspring. Each year, with few exceptions, more cones are borne, but many of them remain unopened. In this way quantities of seed are stored. As the tree gets older, a strange fate overtakes the unopened cones along the main trunk. The rapidly growing woody tissues begin to engulf the cone bases, and slowly they disappear. Each year less and less of the cones can be seen and, finally, nothing but the tips are left protruding from the trunk. Come back several years later, and you will find nothing but a swelling to mark the location of a completely engulfed cone. Wait a few more years, cut the tree, saw it into boards, and you will probably find that you have sliced through several of these embedded cones. If you dig them out and heat them sufficiently the seeds will drop out—and if planted some of these will germinate and grow into normal jack pine trees!

Many jack pine cones require fire or other heat to open. If this provision was "designed" so that burned-over areas would be seeded with the accumulated crops of many years, then it appears that in some cases the plan defeats its purpose. However, perhaps it is just an example of the greatest good for the greatest number.





Jack pine produces cones at an early age. Female flowers catch pollen (upper right) and at the beginning of the next spring, appear as small green cones (above). They mature in two years (upper left), some to open and shed their seed (left) while others remain unopened on the tree. Then a strange thing happens. As the tree grows, woody tissues engulf the old cones along the main trunk and eventually they are completely entombed in the trunk wood (below)



MAPLE SUGAR OR MAPLE LOGS?

By JOHN B. WOODS

This article discusses one of Vermont's interesting forestry problems, disclosed by the Forest Resource Appraisal of The American Forestry Association. Area and volume data will be released at a later date.

IT IS a forestry axiom that good markets for woodland products are a *sine qua non* of sound forest management. Conversely, higher prices for wood should mean better forestry in the woods, but frequently do not. Consider, for example, the little state of Vermont and its maple groves. Ordinarily most of these stands are managed for production of maple sugar and only the very decrepit veterans are cut down. But let the price of rock maple logs touch $30 a thousand feet, delivered at local mills, and whole groves of sugar maples fall before the loggers' saw, with no thought for the forestry future.

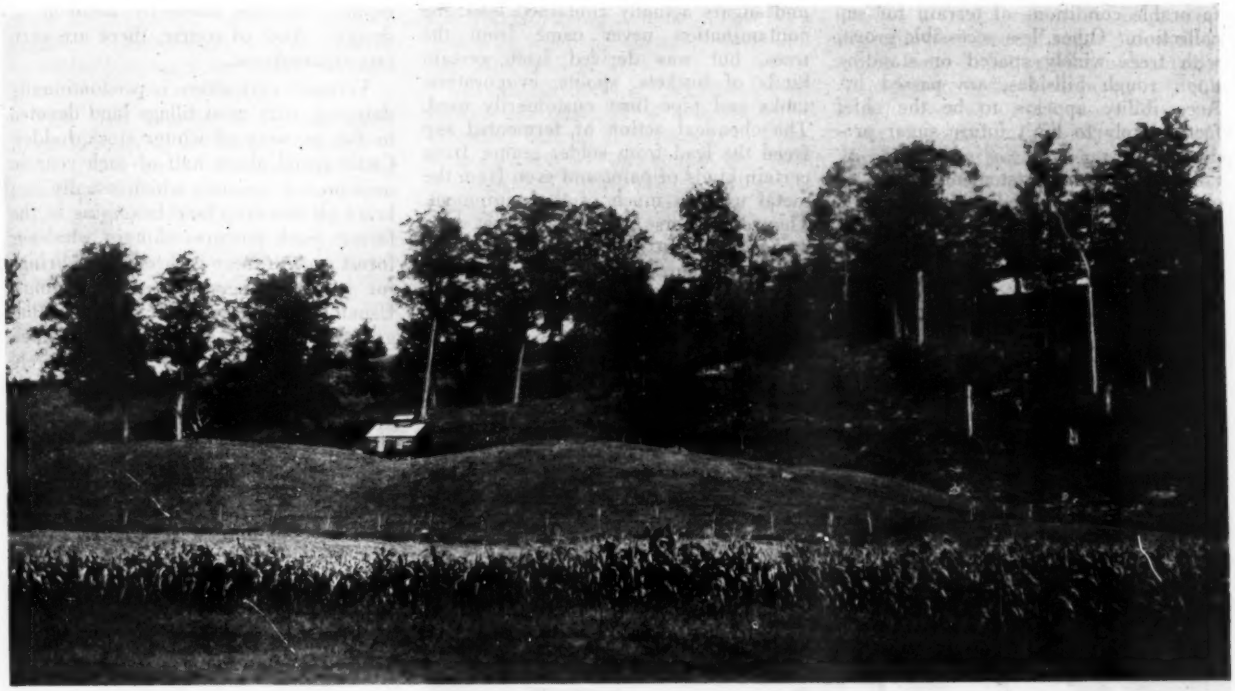
Log prices have been high for several years, and in a number of counties there is a swelling chorus of complaint about the progressive destruction of maple groves. Newspaper editors write protesting editorials. Less articulate but equally fearful are local merchants who see agricultural income reduced by the loss of an important part of the producing plant, the farm sugar places.

Lumber and specialty manufacturers who buy these logs come in for a share of such criticism. Dollar-conscious individuals who have made a business of buying farms in order to cut and sell the merchantable timber standing in woodlots are referred to as public enemies. In fact, a considerable number of Vermonters are "het up" about this matter. Even State Forester Perry Merrill, a man not easily excited, acknowledges that a bad situation exists in at least three counties.

Maple lumber, mostly *acer saccharum*, the best sugar species, makes up from 25 to 30 percent of the state's yearly sawmill output. It has held this relative position for many years, and since much of the volume comes from farm woodlots, it is evident that there has been more or less cutting in maple groves for a long time. Not so clear is the effect of such continuing attrition upon Vermont's permanent farm and forest economy.

Pure maple syrup now on the shelves of

A fine maple grove which was destroyed in 1945 for the production of thirty-dollar logs



A Vermont sugar house stands neglected among stumps of fine maple trees. Only elms, oaks and butternuts remain here

fancy groceries in Washington is priced at $6 a gallon, which, even with due allowance for middle men, should mean that farmers who produced it were doing very nicely. However, the 1945 season was so short that most producers obtained only one "run" of sap and made scarcely enough syrup or sugar to justify the labor of cleaning and putting out buckets and gear, tapping the trees, and handling the equipment back into the sugar houses. Instead of a normal year's crop of 10 million pounds of sugar or its equivalent in syrup, Vermont farmers made less than three million pounds. Top ceiling for producers was $2.09 for a gallon of syrup, but even a fair price does not help much when one has little or nothing to sell.

Normally Vermont's maple sugar products bring in to farmers more than $2,000,000 each spring. For several years prior to the war, the average number of maple trees tapped was slightly over five million, in about 9,500 sugar places. Thus one might say that nearly 10,000 farmers were working their trees and realizing, on the average, about 40 cents a tree.

When a thousand feet of maple logs sells for about $21, as was the case in 1928, a good sugar tree represents a stumpage value of $2 to $3. But when logs bring $30 at the mill this same tree is worth, as it stands, $5 to $6. These may be considered capital or investment values, since they represent a part of the farm plant.

Maple syrup does not make itself. There is much hard work involved, which partly explains why annual earnings of 40 cents a tree are not always sufficiently attractive to cause farmers to keep their sugar maples. Many miss or ignore the fact that in selling such trees they dispose of a part of the farm production unit. It is questionable whether the proceeds of such capital liquidation are often better employed elsewhere.

A person in search of indications as to the future of maple sugar making naturally looks to the past for guidance. The record shows that sugar making has declined in most other northern states but has kept up well in Vermont. From an early writer it is learned that in 1910 Vermonters tapped 5,585,632 trees, while the official production record shows that 5,343,000 maples were worked in 1934. In 1944, despite wartime labor stringency, 3,496,000 trees were tapped. All this leads one to inquire regarding the overall reserve of tappable trees and how the years have treated them.

Old time sugar makers recall that at the turn of the century caterpillars overran the hardwood forests during three successive years, killing vast numbers of maples and weakening survivors to such an extent that sugar yields were low for four or five seasons thereafter. There is no estimate of the number of trees killed, but it was considerable. In many sugar places orchards of a thousand trees were reduced by half. Facilities for estimating the extent of natural disasters were better in 1937, when a tropical hurricane took a wrong turn and tore through New England. The toll in Vermont at that time is said to have been a million sugar maples thrown down.

In the State Department of Agriculture at Montpelier, Harold Dwinell has watched the statistics of maple sugar production for two decades. It is his opinion that even in normal years no more than half the tappable maple trees are worked. At present the number is even less because of the lack of help. Probably there are 10 million or more sugar maples standing in the groves of this state today. He further prophesies that so long as farm wages remain high, sugar production will be curtailed. Also, while lumber prices stay up some cutting of maple will go on.

It is interesting to note that reduction of the number of trees tapped follows a definite pattern. Certain sugar places are worked as usual and all the trees standing therein produce. These are the conveniently situated stands with

favorable conditions of terrain for sap collection. Other, less accessible groves with trees widely spaced or standing upon rough hillsides, are passed by. Accessibility appears to be the chief factor likely to limit future sugar production.

Possibly such a statement should be qualified to acknowledge that there is a chance of bringing a number of the less favored sugar places into regular production through the use of labor saving devices, particularly gravity sap conveying systems. A decade ago there was widespread adoption of pipe lines reaching out to every tree, thus doing away with hand-emptied buckets and horse-drawn gathering tanks. However, sap does not *run*, it drips from the taphole, possibly as much as a quart in an hour when weather is right. Thus the outer reaches of these pipe lines never carried more than thin trickles of the sweet fluid, and during sunny days the metal of which they were made absorbed heat which speeded up the growth of mould organisms, so that the sap tended to ferment or "sour" on its way to the boiling-houses.

Since even a slight trace of mould in sap lowers the quality of the final product, this result from the use of pipe lines was bad enough. Yet there was worse to come. In 1937, the Federal Food and Drug Administration found that certain shipments of maple products made in the United States and Canada contained lead and were unfit for human consumption.

The Vermont Agricultural Experiment Station got busy at once, and learned that while some Vermont syrups and sugars actually contained lead, the contamination never came from the trees, but was derived from certain kinds of buckets, spouts, evaporators, tanks and pipe lines customarily used. The chemical action of fermented sap freed the lead from solder seams, from certain kinds of paint and even from the metal used in much of the equipment. The researchers also proved that lead can be kept out by applying aluminum paint to all surfaces which come in contact with sap. So the farmers were shown how to save the situation, albeit at some cost to themselves. Because the painting of thousands of yards of small metal tubes represented a fussy and costly chore, interest in pipe lines took a nose dive in the late 1930's. Certain developments now tend to revive it. Experience shows that treated pipes absorb little heat in daytime, so that fermentation is practically nil. Present indications point to continued high prices both for maple products and for hired help, justifying "mechanization."

Typical Vermont village sawmill—a permanent industrial unit—cutting all species of hardwoods

Thus, some people believe that future demand will make it worth while for Vermonters to tap more maple groves than ever before, even though it must mean bringing into production many of the less accessible and difficult-to-work stands. Such a contingency raises the question of when, if ever, new trees will be ready for tapping upon the old, more favored sugar making sites.

Traveling through Vermont and noting upon sunny slopes scores of boiling-houses, standing neglected among the stumps of fine maple trees, one naturally asks why these farmers failed to provide understories of young maples to replace veterans taken by accident or design. And, of course, there are various explanations.

Vermont agriculture is predominantly dairying, with most tillage land devoted to the growing of winter stock fodder. Cattle spend about half of each year in unimproved pastures which usually embrace all non-crop land belonging to the farm. Such pastures contain whatever forest growth there is, brooks or springs for stock water, and grassy openings. Usually they are pastured so closely that grass is cropped short upon all open areas, and hardwood reproduction rarely gets well started under the maples where cattle love to stand.

Another answer is that the present generation of Vermont farmers is too busy producing milk to worry with sugaring. Yet it is to be noted that the most successful ones still make sugar. The dismal truth appears to be that many of today's farmers have slight comprehension of the place of woodlands in a well integrated farm producing unit, and know nothing about timber growing or management.

This is unfortunate, since Vermont's dwindling agriculture so clearly needs assistance from its expanding forestry. Fifteen years ago the area of woodland in the state was estimated at 3,427,418 acres, or 64 percent of the total land area. Today it exceeds 3,800,000 acres, or 71 percent of the total area. During the war farm abandonment took on an added impetus; because many able-bodied men were drawn to the armed services and to war industries, hundreds of really good farms were left idle and unoccupied. As the employment pendulum starts to swing back, their still fertile fields will attract some former occupants and many newcomers. In either event, their chances of success will be improved by ability to develop and manage such forest growth as may be found in the unused pastures.

It is claimed that the flavor of maple syrup varies in strength from south to north, and that the state's median position accounts for the mild but distinctive flavor of the Vermont product. Such a widely recognized advantage has been and should continue to be the basis of a permanent local industry.

While many veteran trees now being tapped are approaching the end of their second century of life, it is possible to grow maple trees from seed to tappable size in 40 years. Owners of ruined groves, by starting now to replant maple trees about their sugar houses, could assure their sons of new groves to work. Such seedlings would require protection from stock; it is likely that special cultivation also would pay dividends, in

more rapid growth. Certainly the silviculturist could secure proper spacing to assure that every tree would have its share of soil and sunlight.

This tree culture for future sugar production is a fascinating possibility, with other angles. Scientists have long suspected that there is a wide variation in the sweet-producing efficiency of maple trees, even those of the same species and comparable size. Tests made in one forest by the Northeastern Forest Experiment Station of the U. S. Forest Service indicate that actual sugar content of the sap of maple trees may run as high as 8 percent, while the average for a large number of trees probably is about 2.2 percent. A search is now on for trees which naturally produce sap of exceptionally high sugar content. Given a few such inherently sweet trees, the scientists can multiply them by the established horticultural practice of cuttings for grafting.

Undoubtedly Vermonters will be in on such a development, if and when it becomes a fact. Their Agriculture Department is alert and resourceful in its encouragement of both technical and practical progress in sugar making, and in marketing the crop. The Vermont Forest Service has made splendid progress in recent years in giving forest management instruction to farmers. Eleven foresters are so engaged, and while their attention necessarily is spread over the entire range of forest conditions and products, the facilities exist for active promotion of better silviculture among the maples.

During the war emphasis has been upon production of hardwood and softwood lumber and pulpwood. Occasionally, in their excess of zeal, government procurement forces have allowed the impression to spread that sugar place destruction was a patriotic must. It should be possible now to clear up such misconceptions and do away with priorities imposed by outside authority. With a fair prospect that log and pulpwood prices will continue at attractive levels, conditions should favor continued acceptance and use of technical instruction among forest owners.

It is believed that annual wood production in Vermont averages about 424,250,000 board feet, of which about 180,000,000 board feet is made into lumber, 19,250,000 board feet is pulp and excelsior wood, while the equivalent of 225,000,000 board feet actually is sold or burned as fuel. Probably two-thirds of the lumber cut is further manufactured in the state, thus adding to the earnings of local people. While these figures are estimates based upon studies made several years ago, the state forester now has a mandate from the legislature and funds to begin making yearly a census of wood production. A technician already is at work.

Current growth of cordwood and smaller size material is believed to be exceeding annual drain, a logical inference in view of the continuing farm abandonment. The cut of sawlog size timber is probably considerably in excess of growth among species other than sugar maple. In the case of birch, there is an added loss factor of disease, a blight which prevails widely in southeastern Canada and northeastern United States.

Cutting of maple probably takes each year slightly more than one percent of the stand. The character of cutting, taking all usable trees small and large, in the better and more accessible sugar places affects adversely both forestry and agriculture. What is needed, of course, is management by farmers to maintain well-stocked sugar places from which insect-killed or wind or lightning-damaged trees can be removed for sale without loss of sugar output.

In Vermont, as elsewhere in New England, few forest owners make use of the growing power of such lands. In the region as a whole most timber stands are composed of smaller trees, which practically always are harvested long before they reach maturity. Vermont maple groves are predominantly large trees, under which reproduction should be encouraged. Owners in the Green Mountain State need more young maples to put their stands in balance. In view of the great importance of this tree in agricultural production it is to be hoped that forest extension work may be strongly angled in support of growing sugar maples and keeping them.

This chunk was left (above) because it may contain metal sap-spouts and nails from which buckets were hung for many decades. The nearer stumps (below) are all that remain of maples blown down by the hurricane of 1937. Later cutting finally destroyed this fine sugar place in 1945

WATER, SCENERY and CROSSTIES

By J. C. H. ROBERTSON

This article previews the findings in Wyoming of the Forest Resource Appraisal of The American Forestry Association. Other states will be similarly presented in forthcoming issues.

ALTHOUGH actually situated much nearer to the Pacific than the Atlantic Ocean, Wyoming is usually regarded as a mid-continental state. High upon the Rocky Mountain backbone, there is no way for its people to go but down. Often it is said that all highways out of Wyoming run downhill. Snow-fed streams flow north, east, south and west, to join the Missouri, Colorado and Columbia river systems.

Lowest point in the state is where the Belle Fourche crosses into South Dakota, 3,100 feet above sea level. Gannett Peak, in the Wind River Range, reaches 13,785 feet, or more than two miles higher. Several dozen peaks in various parts of the state are more than 10,000 feet high.

Historically, Wyoming has been identified with much of the drama of western settlement. Adventurous white men were drawn there early by its wealth of furs and game. Somewhat later, but still more than a century ago, emigrants breaking the Oregon Trail came pushing their ox teams up the North Platte and Sweetwater rivers, crossed the great divide at South Pass and struggled northwestward toward the Snake. The

Wyoming timber stands constitute a vast watershed protection system. This is part of the Jackson Hole country

plains Indians were inhospitable and tough, so white settlement here was delayed until after the Civil War.

Such notable events as Custer's Last Stand (1876) and building the Union Pacific Railroad (1867-68) were milestones toward statehood, which was attained in 1890. Another happening, peculiarly Wyoming's own, yet having national significance, was the setting aside of 3,000 square miles of forest and lake as the Yellowstone National Park, first of a far-flung system of great natural spectacles to be reserved for enjoyment by the public.

Yellowstone Park, with its countless geysers and other natural wonders, has long been a favorite objective of travellers. Thousands of Americans travelled through the park in 1945, notwithstanding the fact that facilities for their comfort and enjoyment were decidedly meager.

It is possible, nowadays, to fly across Wyoming in commercial passenger planes and so to secure a bird's-eye view of the state. The picture so obtained is one of a vast tableland, with north-south mountain ranges sticking up here and there, and the northwestern portion pretty much given over to high mountains. Above 6,000 feet or thereabouts, the slopes are usually forested; below such a level they are well stocked with grass, except in certain least watered areas.

Of a total land area exceeding 62,000,000 acres, 11,500,000 are wooded, albeit not everywhere densely covered. Of untimbered range there is nearly 43,000,000 acres; this is the vast stock-supporting grass-land for which the state has long been famed. Farmers own 2,455,000 acres of crop land, practically all irrigated, and 1,723,410 acres of improved pastures in proximity to streams. No great part of Wyoming is taken up by cities and towns; the total is but 69,465 acres.

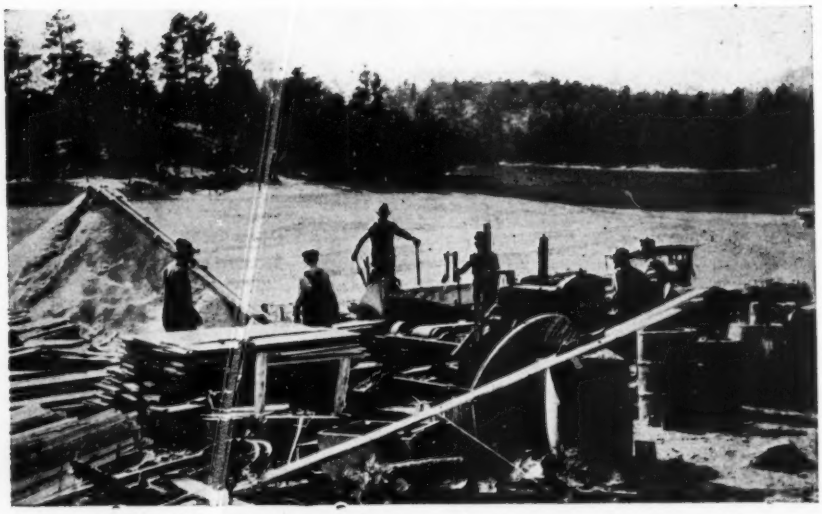
Forests are for the most part publicly held. There are 12 national forests partly or wholly within Wyoming. Their total area is 8,561,000 acres, and of this 4,966,000 acres is timbered. National parks and national monuments contain 2,317,000 acres, of which approximately three-fourths is forested. After the Indian wars the redmen were placed upon reservations, aggregating about 2,000,000 acres. Of this, possibly 353,000 acres are lightly timbered. The state of Wyoming retains title to 120,000 acres of land that supports some tree growth. Ranchers, mining companies and farmers own approximately 750,000 acres of tree-bearing land.

Irrigated orchards and farm fields, protected by planted windbreaks of trees receive their life-giving moisture from snow-fed mountain streams

The popular conception of Wyoming's forests is that these stands constitute a vast watershed protection system, occupying the higher ground and receiving untold quantities of snow moisture each winter and then releasing that moisture gradually during the summers to maintain the flow of natural streams and the levels of man-made reservoirs. This is correct, so far as it goes.

It is well known that Yellowstone and

Grass is one of Wyoming's greatest resources, in terms of land area their most extensive crop, providing ideal grazing for fine beef



In Crook County of northeastern Wyoming sawmills are small portable affairs, many of them working in private timberlands

Much commercial logging concentrates upon railway crossties. Thousands of them are ready to be driven down the Wind River

Lodgepole pines from the national forests are here being made into crossties. The boards and planks are incidental to tie making

Grand Teton National Parks are reserved by federal statute from commercial forest utilization. Word has gotten about to a considerable extent that at least some people in the Jackson Hole country are unhappy about recent public actions which appear to threaten further curtailment of commercial forest cutting and other private enterprises there. Whatever may be the other merits of such cases, some billions of feet of timber are unavailable even for conservative cutting.

Also interesting is the fact that the considerable area of forest on the Shoshone Indian Reservation is of some local importance. This timber is handled under direction of a trained forester and is being manufactured by Indians resident on the reservation for their own use.

Private timber holdings are found partly as small tracts interspersed with federal holdings. Most such tracts are treated rather badly by their farmer and rancher owners. However, an equal or slightly larger total acreage is owned by mining and other industrial companies. Crook County, in northeastern Wyoming, which contains the northern portion of the Black Hills, is a center of private ownership. In contrast with close and wasteful cutting by ranchers and farmers, one finds a sustained yield policy being followed by the Homestake Mining Company.

The great bulk of lumber production comes from national forests, which are administered under a policy calculated to maintain the forest capital. Average annual growth ranges from 40 to 55 board feet an acre each year. On most private lands the growth is much less by reason of heavier cutting and resultant reduction of growing stocks.

Impact of the war upon Wyoming forests is indicated by comparison of annual drain during the 10-year period 1934-1943 with the five-year average from 1939 to 1943. In the first period, average yearly softwood drain, including fire and insect losses on commercial sawtimber lands, was about 56 million board feet, while comparable growth was 58 million feet. For the war period the annual drain rose to about 62.5 million feet.

Growing seasons are short, rainfall is meager, and the forester cannot expect to produce sawtimber at rates to rival the southeastern states or the region of the lower Columbia River. Yet there are considerable stands of commercial timber to work with. On the national forests are 13,425,000,000 board feet of timber in trees 10 inches DBH and up—and probably 65 percent of this can be profitably cut. Private owners

(*Turn to page* 574)

HOW TO KILL A WILDERNESS

By LIEUTENANT DAVID R. BROWER

DEATH isn't a pleasant thing to see, but you can get used to it. You may get so that you can just count the bodies; or you may study them academically, to see just how death occurred. The waste of human future is too appalling to ponder upon. Besides, you know that the death of man is irrevocable. However tragic it may be that he was young, and died unnecessarily on a battlefield, you can, because of that irrevocability, learn to accept it.

This is not the only death I have seen. In such parts of the mountains of Italy, Austria, Switzerland and Jugoslavia as I have been able to observe, are the shattered remains of what must have been beautiful wildernesses. These wild places had their one-time inaccessibility to defend them—their precipices, mountain torrents, their glaciers and forests. But they lost their immunity; they felt the ravages of a conqueror. And now they're dead. Their death isn't irrevocable, as is that of man; but, still, in time, you become calloused to it, and merely wonder, academically, what caused the demise.

What does a postmortem examination show? Apparently men sought to cure the ills they thought the wilderness suffered from. It was disagreeable, its cliffs too high, its streams too wide; it had no economic value, produced nothing, did no one good save the lucky few who prospered in the oases its streams watered; it wasn't designed for the greatest good to the greatest number; men could not enjoy it; they couldn't even live in it. So men tried their remedies—all sorts of them—and the wilderness died of over-dosage.

What were the remedies?

Trails.—They now lead everywhere. Some are cowpaths; some are substantial, paved, rock-walled affairs that Italians seem to delight in building; others are perhaps cable-ways leading to the tops of peaks. Many lead to little cultivated islands among non-productive slopes; the materials for the cluster of buildings at the heart of each island were carried over these trails by oxcart, even by hand.

Roads. — Inevitably some of these trails grew to roads, the roads to highways, with tunnels and bridges matching the increasing elaborateness of the roads. They are everywhere—over the highest passes, into what could have remained the wildest canyons. The Italians' industry, in Yosemite, would by now easily have put a road up by the Leaning Tower, with tunnels for switchbacks, a bridge just over the top of Bridalveil Fall, with a hotel there; then, with a tunnel to the base of Cathedral Spires, the road would continue to the base of Glacier Point. On Half Dome they'd have a small village, complete with church, surrounded by cultivated fields, soil for which had been backpacked from Yosemite Valley by the women. That village would have electric lights, with a power house using part of the drop of Nevada Fall. Colby Meadows—and every meadow in the High Sierra you've ever camped in—would have been enlarged by tree cutting, would be terraced if at all steep, and its center would be a dirty, sooty village, smelling strongly of such of the age-old sewage as they hadn't quite managed to dump in Evolution Creek.

Power.—From quaint old mills to lusty power houses, fed by anything from tiny rock-lined canals to scarring flumes and penstocks—between these extremes, and including them, the streams are so thoroughly harnessed you can hardly see the water for the leather. Then add to each development the accompanying high-tension lines, towers, and essential roads.

Buildings.—Tiny stone farm houses or refuge huts supplied irritation that proved to have cancerous results. Villages, the villagers just eking a living from their hard-won land, were fatal to some wild places. The huts, built for those who didn't have a tent and wanted shelter, encouraged more people to come—people who didn't have, progressively as the years went by, (1) bedding, (2) equipment of any kind, (3) food, (4) drink, (5) entertainment, and finally who didn't particularly want, in the presence of (4) and (5), any scenery. The final malignant growth that throttled the surrounding wilderness would then be an elaborate hotel. Were Yosemite in Italy, there would be a hotel on the saddle between mounts Lyell and Maclure, accessible by a very good and prominent tramway.

Mining.—The motto: wherever it is, dig it out. Here, however, I am afraid Italy must take a back seat to Colorado, where you may start to admire some cliff for its inaccessibility, your reverie is shocked by some miner's shack right in the middle of it. No class-6 climb ever stopped a Colorado miner. In Italy there is one difference. The country is older, and they have long since dug almost everything out, and increasingly must now look, for their future needs, over borders and over seas. A Kodachrome movie could show this story well. You could make panorama after panorama of a beautiful mountain scene, each ending where some mountainside still festered from the removal, without anaesthesia, of large areas of the epidermis of verdure, and even much of the bone. And the surgeon's tools, a tramway, a stamp mill, or a dam to divert a stream, were left lying there and are red with rust.

Fortifications.—For every road that made the mountains, and the borders the mountains had held, more attainable, men built fortifications to deny each other that access on call. Forts are everywhere, too—on canyon bottoms, high on the canyon walls, built into commanding peaks—everything from quaint old World War I affairs, dilapidated and all but overgrown, to super downdraft concrete strong points established in the early 40's, some so well camouflaged as to have imitation-rock swinging doors over the embrasures. Had they been manned toward the close of the Italian campaign, when the 10th Mountain Division, leading others in this theater, were exploiting their Po Valley gains by beating most of the Germans to the Alpine passes, someone else would surely have had to write this piece.

To kill a wilderness, then, the steps are simple:

1. Improve and exploit it. Keep adding the comforts that each preceding addition has brought people to demand. *Procedure:* Build another trail. The users will want a shelter hut. Build that. The guest will want food and drink, hot and cold running water, light. Then he'll want more room for friends. Or supply the site by plane, and sooner or later you will have a clientele with the same demands. Obviously a road will be needed right to the spot, then beyond it to link with another road of similar origin. The game preserve the road cuts will shrivel from the wound, but will only be reduced in effective game refuge by about 50 percent. The process may

(*Turn to page* 569)

THE GOVERNOR PLANTED TREES

Sinnissippi Farm lies along the west bank of Rock River

Sinnissippi Farm Is a Memorial to the Faith Frank O. Lowden, Illinois Governor and Twice Presidential Candidate, Held in Farm Forestry

By CHARLES S. WALTERS

STRETCHING along the east bank of the slowly flowing Rock River, south of Oregon, Illinois, lies picturesque Sinnissippi Farm. Rich in soil, in beauty and in historic background, the farm had its origin almost a half century ago when the first block of more than 500 acres was bought by the late Frank O. Lowden, World War I governor of Illinois and twice presidential candidate. Today it is a 4,500-acre memorial to his interest and effort in agriculture and forestry. Mr. Lowden died in 1943, but Sinnissippi Farm, especially its forest, continues to be managed in accordance with his wishes and plans.

The name "Sinnissippi," Indian word for "Rocky Waters," was given the estate by Mrs. Lowden. Long ago Abraham Lincoln and his fellow scouts roamed its hills in pursuit of the Indian chief, Blackhawk. His Sac and Fox warriors harassed settlers during the Blackhawk wars. Today Lorado Taft's monument of Blackhawk stands high on the east bluff of Rock River.

Sinnissippi Farm was developed by Mr. Lowden with remarkable shrewdness. Primarily a lawyer and statesman, his training and experience served him well in making it a profitable proposition. He utilized all its assets with keen foresight. Shaded acres were set aside as woodland and protected from fire and grazing. Open acres were planted in pine. Following scientific advice secured in this country and in Europe, he put forestry principles into practice.

Results of Mr. Lowden's efforts were gratifying. Today nearly 2,000 acres of the farm's 4,500 are classified as forest land. Some of the finest northern white pine in the state grows on about 25 acres. They were planted on a per-thousand-tree contract nearly 40 years ago by a commercial nursery whose men were opportunists and increased the returns of the contract by excessively thick planting, which resulted in extremely dense growth. Mervin Spangler, carpenter in the service of the Lowdens for 40 years, helped plant the trees. In the years that followed he pruned the dead limbs from the pines, helped convert thinnings into lumber and fence posts, and is now using the lumber to repair old and build new farm structures.

After the original plantings, forestry interest at Sinnissippi subsided. There was little activity until 1938 when Dr. J. Nelson Spaeth, now head of Illinois' newly organized Department of Forestry in the University of Illinois' College of Agriculture, was introduced to the Sin-

nissippi forest. A veteran of 20 years of research work, Dr. Spaeth was well equipped to correct the injurious effects of the dense white pine planting.

A study was begun to determine the effect thinning would have on the remaining trees. Five quarter-acre blocks were set aside for the purpose. Each tree was measured and designated by number. One block, called the "check plot," was used as an experimental control. Neighboring pines competing with trees within the experimental area for light, water and nourishment were removed. This process continued until

White pines planted by the Governor forty years ago

the check plot trees stood 12 to 15 feet apart.

After thinning, a wood treating tank, to prolong the life of fence posts, was built from boards salvaged from an old silo. About 100 seven-foot posts could be soaked at one time in the tank full of preservative. Sponsored by Mr. Lowden, the Illinois Agricultural Experiment Station and the U. S. Forest Products Laboratory started the experiment by soaking 600 posts in a solution of

Jack pine plantation, part of the 200-acre planting program at Sinnissippi. Half of the 4,500-acre estate is now in forest

pentachlorophenal and fuel oil. Other hundreds were soaked about 48 hours in a five percent concentration of the solution, then dried and sold. The sale of treated posts returned Mr. Lowden about $40 an acre. Hundreds of trees remained after the thinning and are growing considerably better as a result.

Since 1928, approximately 200 acres of land unsuitable for farming have been planted with trees under the supervision of Dr. R. W. Lorenz, assistant chief of the University's Forestry Department. Most recent plantings have been in pines, due to their rapidity of growth as compared with hardwoods. Some of the hilly ground has been contour plowed and filled with small trees.

For Christmas tree yield, nearly 20,000 Douglasfir, white and Norway spruce have been planted at Sinnissippi. These will be ready for harvesting about 1950.

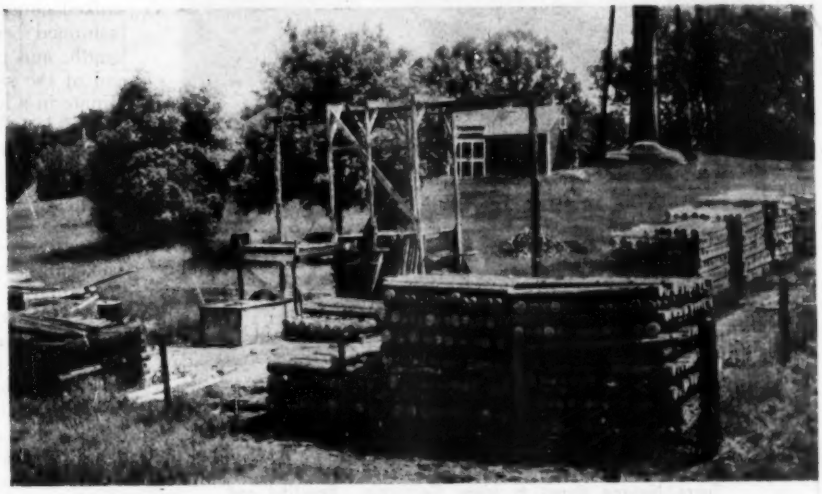
During the past two years churches, lodges and Boy Scout groups have benefited by gifts of trees thinned from the white pine plantings.

Much of the farm's forest is composed of red, black and white oak, elm, hickory, black cherry and black walnut.

Mature oak trees were cut and converted into lumber several years ago.

Altogether, a total of 100,000 board feet of lumber has been produced at Sinnissippi, a considerable quantity of it for the war industries. Heavy skid-

(*Turn to page* 571)



Posts from thinning operations in the white pine plantation are treated on the farm. They produced income of forty dollars an acre

JEFFREY PINE

(Pinus jeffreyi Grev. and Balf.)

BY WARREN D. BRUSH

Jeffrey pine, known also as bull pine and black pine, is scarcely less magnificent in size than its associate ponderosa pine, which it so closely resembles that some botanists consider it a variety of the latter. From the forester's point of view, there appears to be no practical reason for distinguishing them, as they occur in practically the same region, are nearly of the same form and have similar wood.

Jeffrey pine is found from southern Oregon down along the Sierra Nevada slopes to lower California. Beautiful and symmetrical in form, mature trees are often 180 feet high

Botanically, however, Jeffrey pine, discovered in northern California in 1850 by John Jeffreys, differs in many respects from ponderosa. The needles are bluish green, compared to the yellow-green foliage of ponderosa; moreover, the huge, thick cone of Jeffrey pine, five to fifteen inches long, contrasts conspicuously with the smaller cone of ponderosa, which measures from three to six inches. The prickles on the Jeffrey pine cone scales are longer than those on ponderosa pine, but they turn inward and hence the cone can be handled without the prickly feel typical of ponderosa cones.

The tree grows from southern Oregon southward along both slopes of the Sierra Nevada to lower California. It mingles with ponderosa pine but can endure greater extremes of climate, and east of the Sierra, where conditions are much more rigorous, it is the more important species. Mature trees attain heights of 100 to 180 feet, with short, spreading, or often pendulous, branches, the uppermost ascending, forming an open pyramidal and sometimes narrow spire-like head. Trees from 200 to 400 years old have trunk diameters of from three to six feet.

The bluish green needles are from five to ten inches long. They remain on the twigs longer than those of ponderosa pine, thus giving the foliage a heavier and denser appearance. The twigs of a year's growth are considerably thicker than those of ponderosa and distinctly purple when young, compared to brownish green in ponderosa pine; when cut or bruised, they exhale a fragrant, violet-like or pineapple aroma, whereas twigs of ponderosa give off a turpentine odor.

The male pollen-bearing flowers are yellow-green; the female, or ovulate flowers, which occur in clusters or pairs at the ends of the upper branches, are purplish. The drooping, short-stalked cones are shaped something like an old-fashioned beehive, thick in proportion to their length, and purple in color when mature at the end of the second season. The cone scales terminate in a long, slender incurved prickle, which is occasionally deciduous. After shedding their seeds, the cones turn a light russet-brown. They fall in September.

The seeds are yellowish brown mottled with purple, similar to those of ponderosa pine, but are larger—often nearly one-half inch long. The wings are also larger—from one to one and three-quarter inches long. It takes about 3,100 seeds to weigh a pound.

The oblong winter buds are only slightly resinous on the surface; in ponderosa pine, they are profusely dotted with resin droplets. Although the bark is similar in appearance to that of ponderosa, it is a darker cinnamon-red, and is usually tinged with lavender or purple, particularly on old trunks.

While Jeffrey pine is a prolific seeder, it pro-

duces seed only at a rather advanced age. Large numbers of the seeds are eaten by birds and rodents; and the heaviness of its seed confines the seedlings chiefly to the neighborhood of seed trees. It reproduces more vigorously at higher altitudes than does ponderosa pine.

Jeffrey pine is an ornamental tree, mainly because of its symmetrical habit when young and its long, pale-bluish leaves. They are longer than in most other hardy species. It is occasionally planted as an ornamental in eastern Europe and has been cultivated with some success in eastern United States. It is hardy in sheltered positions as far north as Massachusetts.

It is naturally subject to the same insect and fungus enemies as ponderosa pine, the two most serious being the *dendroctonus* bark beetle and mistletoe. Attacks by bark beetles may follow fire damage and frequently accompany mistletoe. They channel beneath the bark of the trunk and kill the tree more quickly than does mistletoe, a parasite, which centers its attack largely upon the limbs and branches. Two forms of needle disease are also common. These either distort the needles or cause them to die, though in neither case do they kill the trees. They materially reduce the rate of growth, however.

In Oregon and other regions of the West caterpillars of the pandora moth have eaten the needles from large areas of pine. They reach proportions of an epidemic at fairly regular intervals of twenty or thirty years, and continue abundant for six to eight years.

Figures on stand and lumber cut include both Jeffrey and ponderosa pines. The proportion which the Jeffrey makes up of the total is not known, as statistics are not kept separately, no distinction being made between the two in the lumber trade. The estimated merchantable stand of both pines is 225,000,000,000 board feet of timber. It is second only to the stand of Douglasfir in this country, while the amount of lumber cut ranks third. In 1944 the cut of ponderosa and Jeffrey in the United States was 3,768,122,000 board feet, coming from Oregon, California, Washington, Idaho, Arizona, New Mexico and Montana.

The wood is similar to that of ponderosa in appearance, properties and uses. That from the outer portion of large trees is comparatively soft and light in weight, often bearing a close resemblance to white pine. The wood in young trees and in the heartwood of older trees is generally heavier, harder and stronger. In general, the wood of Jeffrey pine, because it occurs largely in regions of low rainfall where the growth is somewhat slower, is lighter and softer than that of ponderosa pine. This lighter, softer wood, as well as that of ponderosa, is especially suitable for window sash, doors and inside finish of houses. Lumber that has defects in it, such as knots, goes largely into boxes, for which it is well adapted on account of its moderate weight, light color and ease in working with tools and nailing. Much of the heavier, denser wood is employed in house construction, such as sheathing, joists, and rafters.

When erect on the branches, the cones resemble an old-fashioned bee-hive. They are thick and purple in color when mature. The characteristic bark of Jeffrey pine (center) is dark cinnamon-red, tinged with lavender or purple. The map shows the natural range of Jeffrey pine

This champion Jeffrey pine near Idyllwild, California, is twenty-five feet one inch in circumference

Tree Trails . . .

BIG PINES

THE largest Jeffrey pine, *Pinus jeffreyi*, on record with The American Forestry Association is a tree 25 feet in circumference, four and one-half feet above the ground. It stands on Dutch Flat, a mile and a half northwest of Idyllwild, California. Richard H. May, of Los Angeles, who nominated this champion tree, estimated its height at 130 feet.

Utah boasts the largest Colorado pinyon pine, *Pinus cembroides edulis*. Eleven feet in circumference, this gnarled giant growing in La Sal National Forest, is 33 feet high with a crown spread of 23 feet. Owen DeSpain, a U. S. forest ranger at Moab, measured the tree at a point four and a half feet above the ground, and reported its location a quarter mile south of the North Beaver Road, along the trail from North Beaver to South Beaver.

The champion knobcone pine, *Pinus attenuata*, is located in the Rogue River National Forest, Oregon, on the Steves Peak Trail, close to the Josephine-Jackson County line. The tree is nine feet one inch in girth and was nominated by Oliver V. Matthews, of Salem, Oregon, who measured the tree at breast height.

King of the pinyon pines is this giant in the La Sal National Forest, Utah. It is eleven feet in girth

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FORESTRY FOR FUTURE FARMERS

By ROBERT N. HOSKINS

DURING the past 11 years, the Florida Forest and Park Service has been holding annually a two-week forestry training camp for Future Farmers of America at the O'Leno recreational area on the historic Santa Fe River near High Springs. A total of 1,200 farm boys, selected by vocational agriculture instructors for outstanding forestry work in Florida, have attended the camp to date.

This year, as a result of a program sponsored by the industrial department of the Seaboard Airline Railway, in cooperation with the state forest services and vocational agriculture departments of Virginia, North Carolina, Georgia and Florida, the American Turpentine Farmers Association and a number of pulp mills, boys from other southern states were sent to the Florida training camp as a reward for outstanding accomplishments in farm forestry.

The boys so recognized were Joe B. Carr of Blacksburg, Virginia; John L. Tart of Four Oaks, North Carolina; Robert Hames of Ringgold, Georgia and D. N. Raulerson of Lake City, Florida. In addition to two weeks of forestry training, each boy was awarded a $50 War Bond.

Young Carr was recognized for marking and marketing 200 fence posts, sawing approximately 4,000 board feet of timber and preparing two acres of land for future planting of black locusts. In North Carolina, John Tart assisted in marking 40 acres of timber and thinned five acres of his own farm woods. Robert Hames, in Georgia, planted 6,000 loblolly pines, 1,000 black locusts, pruned and thinned six acres of loblolly pine and cut approximately 500 fence posts. Young Raulerson, in Florida, won his trip to the forestry camp by working 1,500 faces on his naval stores operation. All of the chipping, dipping and transporting of gum was handled by the young farmer.

At the Florida training camp these state winners, along with 125 other Future Farm boys, were instructed by a staff headed by William F. Jacobs, assistant state forester of the Florida Forest and Park Service, who has directed the forestry training program at O'Leno for the past 10 years.

The program is set up to handle first, second and third-year boys. The third year groups are mostly honorary. Educational trips taken by the first-year boys include visits to the Naval Stores Experiment Station, Olustee Experimental Forest, Osceola National Forest, Olustee Nursery, and a number of wood utilization plants in Gainesville, including an excelsior plant, sawmill, wood treating plant and a box, basket and crate factory. Subjects and activities handled at camp include the making of forestry tools, use of tools, tree identification, fire control and the establishment of a seedbed. The second year program includes timber marking, timber cruising, telephone construction and maintenance and logging.

After classes are completed each day, a well planned recreation program is conducted. Competition is keen between each forest group comprised of four cabins and representing from 32 to 40 boys.

Leadership training each evening is another activity participated in by all boys. This is ably handled by J. Franklin Williams, Jr., state supervisor of vocational agriculture, and his staff. All delegates are required to take notes on these night programs. The training gained may then be taken back to their respective chapters.

Farm boys are taught practical forest management at this training camp in Florida. Above are camp leaders J. F. Williams (left) and W. F. Jacobs

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Around the States . . .

Redwood League Re-elects McDuffie

Duncan McDuffie of Berkeley, California, has been re-elected to serve a second term as president of the Save-the-Redwoods League.

Widely known as a conservationist, Mr. McDuffie was one of the leaders in the establishment of the California State Park system. He is also president of the Sierra Club, a vice-president of The American Forestry Association and honorary president of the California Conservation Council. He holds the Cornelius Amory Pugsley Medal, awarded by the American Scenic and Historic Preservation Society for distinguished service in the field of state parks.

One of the outstanding accomplishments of the Save-the-Redwoods League during Mr. McDuffie's first term in office was the establishment of the National Tribute Grove of ever-living redwoods to honor those who served in the armed forces of the United States in World War II. The tribute grove is on the Redwood Highway in Del Norte County, California.

Replanting Tillamook

The initial step in reforesting the Tillamook burn in Oregon (see September issue) will be started by December and carried on throughout the winter months, according to the Oregon State Board of Forestry. The plan includes a monthly planting schedule of approximately a quarter of a million Douglasfir and Port Orford cedar seedlings. In addition numerous experiments will be initiated within the burn in direct seeding, some by hand and some by airplane if conditions make this possible.

The first tree planting crew will operate in the burn area near Cochran. This specific region has been selected from the standpoint of fire hazard. There are few snags and these can be felled by the planting crew when weather conditions are such that the reforestation project has to be temporarily abandoned.

In other parts of the burn extensive experiments in direct seeding will be carried out. On the basis of results accomplished over a two-year period on experimentation, it was stated, it appears that there is a place for this method of reforestation but it requires careful site selection and the elimination of rodents. The animals will take 100 percent of the planted seed in areas that have not been burned and it is questionable whether burns will entirely eliminate them. If trouble is encountered from this source, a program of poisoning will be carried out.

The airplane seeding is purely from the experimental standpoint. Tentative plans call for seeding approximately a section of land, carefully selecting the area and using varying quantities of seed. Examinations will be made next year for germination and survival.

The daily output of the tree planters over conventional hand planting methods is expected to be greatly increased through the use of the Miller tree planter, developed by S. L. Miller, of the State Forestry Department. Through the use of this instrument, inexperienced men have been able to plant trees at the rate of 150 an hour and an experienced hand has upped the rate to 250 an hour. The results of two-year experiments prove that survival is equal to that of carefully hand planted trees.

Virginia Maps Forestry Program

A four-point program to improve and conserve Virginia's forests has been approved by the Virginia State Conservation Commission. The program, calling for an expenditure of $600,000 annually, was briefly stated as follows: Adequate fire protection for all forest land; the use of forest harvesting methods which would remove ripe timber and leave the choice, immature trees growing; planting of idle and marginal open lands; and utilization of wood waste through research for new methods and practical application of known methods.

Lumber Stocks Low

No appreciable replenishment of lumber stocks, which are now at an all-time low, can be expected during the fourth quarter of 1945 because of sharp cuts in production, according to the War Production Board.

With the reduction in military requirements immediately after the end of the war, it was expected that lumber production would be sufficient to meet current needs and add approximately a billion board feet to mill and distributors' stocks by the end of the year. However, because of continued low production and West Coast strikes, little or no lumber will be available for building up stocks, WPB said.

Mill and concentration yard stocks, as of July 31, totaled 3,290,636,000 board feet, and represented only a normal seasonal increase of one percent from the position of these stocks at the end of June.

Wholesale and retail distributors' stocks totaled 2,294,602,000 board feet, as of June 30, a decline of eight percent from the end of the first quarter. Retail stocks, amounting to 1,840,603,000 board feet, as of June 30, showed a 10 percent decline from March 31, reflecting the increased withdrawals from retail yards in the spring and declining shipments from the mills. Wholesale stocks, totaling 453,999,000 board feet at the end of June, increased nearly two percent from the end of March.

Dismal Swamp May Be National Forest

There is a good chance that the Great Dismal Swamp area in northeastern North Carolina will become a national forest.

The North Carolina Board of Conservation and Development, meeting in Andrews early in October adopted a resolution asking federal authorities to consider the matter. Representatives of Virginia agencies were present to endorse the project. According to the resolution, outside boundaries would be determined by the North Carolina Board, and all private property rights will be fully protected.

The Great Dismal, stretching from near Norfolk, Virginia, almost to Elizabeth City, North Carolina, is one of the world's most famous swamps. Formerly 2,200 square miles in extent, it has been reduced to 750 square miles by drainage.

It was named by William Byrd, whose Dividing Line party passed through it, and the royal surveyor described it as a "horrible desart", the heart of which "no beast or bird approaches, nor so much as an insect or reptile." This aversion he laid to "noisome exhalations that rise from this vast body of dirt and nastiness."

However, George Washington surveyed the swamp in 1763 and described it as a "paradise". He became one of the stockholders in a company which hoped to reclaim the land.

In the swamp are dense forests of bald cypress, black gum and juniper, with an undergrowth of woodbine and honeysuckle. In spite of Byrd's eloquent distaste, game is plentiful, especially in the Coldwater Ditch section, where bear, deer, opossum and raccoon occur, and the swamp is a haven for many birds. Fire has ravaged the area continually, and in some sections the peat has been burned to a depth of 10 or more feet.

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FMC Original Fog Fire Fighters are made by FMC's John Bean Mfg. Co. Division, Lansing, Michigan, and Bean-Cutler Division, San Jose, California.

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Other Products of FMC Research and Engineering

THE "WATER BUFFALO" amphibious tractor hauls cargo on water and over the roughest terrain where no other vehicle can go.

FLAVORSEAL... the porous protective film sprayed over fresh fruits and vegetables, annually saves tons of produce from spoiling.

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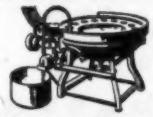
INSECTICIDES AND FUNGICIDES ... a complete line of chemical dusts and sprays which increase yield and quality of crops.



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Recently one of the largest steel companies in the world (name on request) switched to DoALL Band Saws, only after making 29 very minute and concrete, comparative tests.

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DoALL Saws are available in two general styles, Precision and Buttress. Packed in 100-ft. coils in safety dispensing boxes or cut and welded to fit any band sawing or cut-off machine.

REQUIRE NO RESHARPENING

DoALL saw blades are so tough and give so much additional service that it is economical to run them until worn out and then replace with new blades.

PRECISION SAWS

Recommended for use on all ferrous metals. Come in widths from 3/32" to 1", pitches 6 to 32.

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The finest for non-ferrous metals, aluminum, magnesium, plastics, laminates, ceramics, wood, etc. Widths ¼" to 1". Pitches 2 to 6.

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11-45

Wildlife Institute Names Gutermuth

C. R. Gutermuth of Indianapolis, Indiana, has been appointed executive secretary of the American Wildlife Institute. He succeeds J. Paul Miller, who resigned early this year.

Mr. Gutermuth has been active in conservation affairs for many years, having served nearly 10 years as director of education and director of fish and game in the Indiana Department of Conservation.

Southern Railway Names Forester

W. K. Conrad has been named general forestry agent for the Southern Railway, succeeding Roland Turner who recently retired. Mr. Conrad, a graduate of Pennsylvania State Forest School, has been employed since 1928 in both public and private forestry work and for the past 10 years has been engaged in forestry planning and management work with the Tennessee Valley Authority. In his new position Mr. Conrad will manage the company's large demonstration forest at Dorchester, South Carolina and will assist in promoting sound forest management practices in the territory served by the Southern.

New Brush Killer

Studies involving the use of Ammate, or ammonium sulfamate, in killing undesirable hardwood vegetation are now underway as a project of the Texas Forest Service.

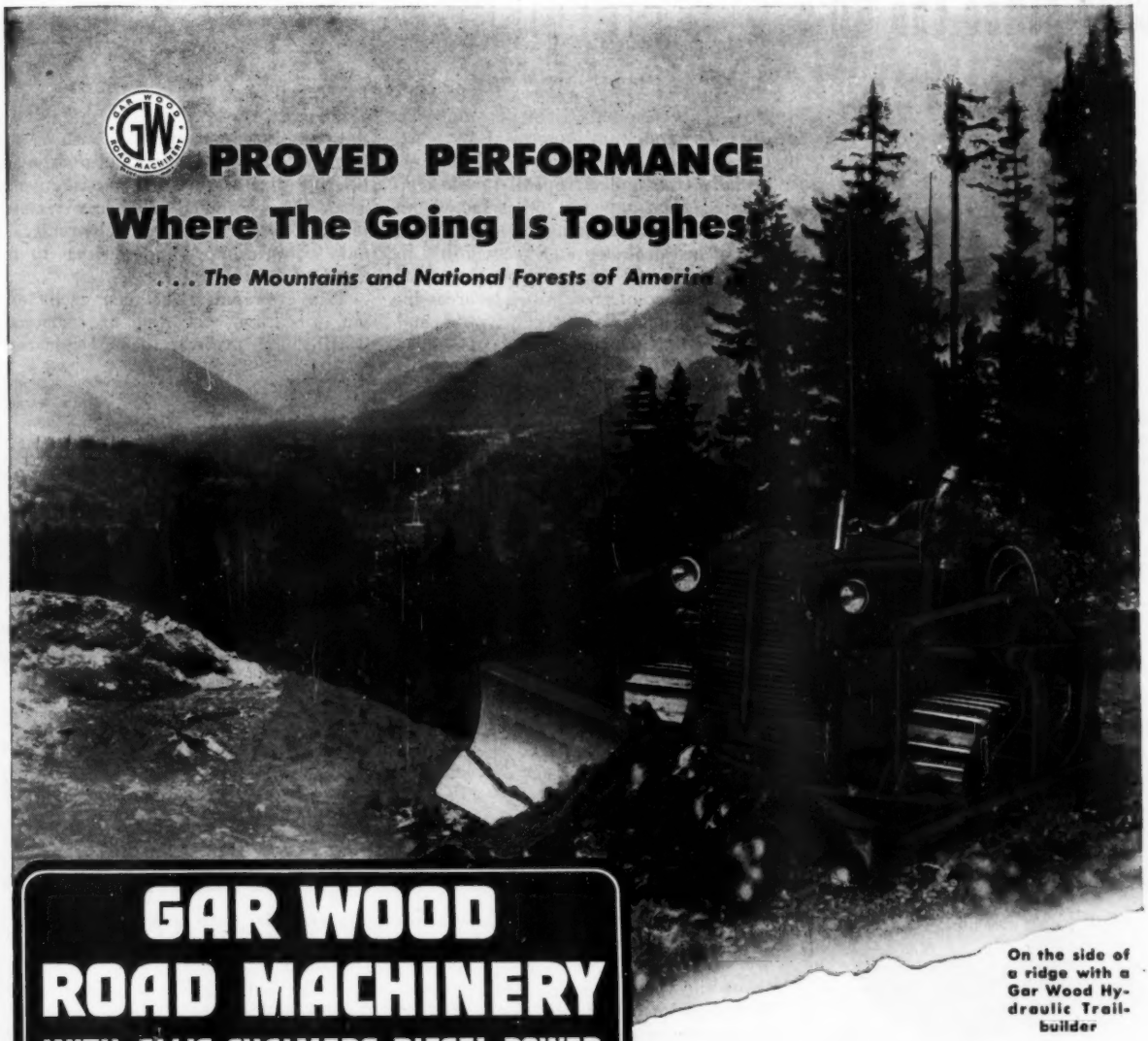
The product is a recent commercial one, the main ingredients of which are sulfuric acid and urea. The reported advantage of this product over sodium arsenic, most commonly used for killing undesirable hardwood trees in East Texas, is that it is supposedly non-poisonous to live stock. It is also reported to have a greater killing effect on the tree and the result brings little or less sprouting.

To what extent these reports are true is now being investigated.

Available on the market at a nominal cost, it is mixed with water for application. The quantity to be used varies with the vegetation to be treated. A good degree of success in the elimination of poison ivy has been reported from the use of this material.

Wildlife Conference in March

The Eleventh North American Wildlife Conference will be held in New York City March 11, 12 and 13, it has been announced by the American Wildlife Institute. Sessions will be held in the Hotel Pennsylvania. The 1935 conference, it will be recalled, was postponed due to travel restrictions.



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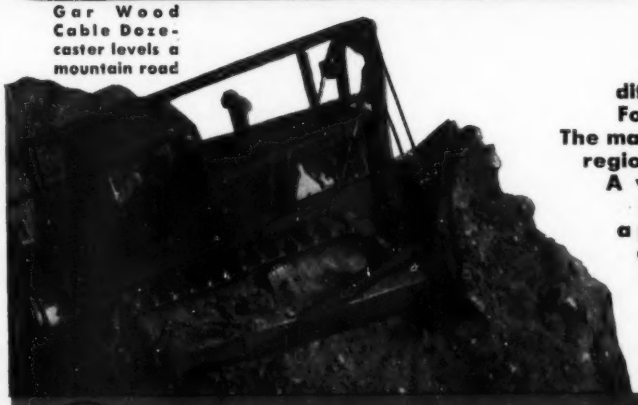

Gar Wood Cable Dozecaster levels a mountain road

For road building in the timberlands, it pays to use Gar Wood Trailbuilders and Cable Dozecasters. These Gar Wood units have demonstrated top efficiency under the most difficult conditions—in the mountainous National Forests and logging woods of America.

The many users of Gar Wood Road Machinery in these regions furnish proof of its outstanding performance. A very large proportion of them have built up fleets of Gar Wood units by repeat orders over a period of years—repeat orders that are dollars and cents testimonials to the superiority of this equipment on the job.

Let the experience of users where the going is toughest be your guide. Order Gar Wood Equipment from your Allis-Chalmers dealer.

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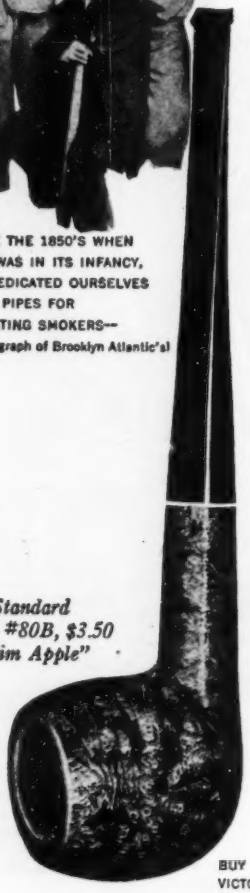

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PIPELINE OF PANDAN

By CAPTAIN WILLIAM H. LAMBERT

PROVISION for an adequate water supply is of paramount importance in selecting an Army bivouac area. This is especially true under tropical jungle conditions. The only two other factors on which the commandant may place equal weight are drainage and accessibility to supply lines. Other lesser considerations are avoidance of proximities to areas infested with malaria or scrub typhus, and choosing the proper amount of shade; meanwhile keeping an eye out for making full use of terrain features in obtaining maximum natural cover.

When asked what he considers the most important feature of a camp, the average jungle soldier will reply, "the showers." Back in the States the answer would probably be the mess hall, but overseas where the diet consists largely of canned and dehydrated foods, "bucking the chow line" is just part of a day's work.

When Battery C, 224th Antiaircraft Artillery Searchlight Battalion landed in New Guinea, the organization was guided to a section of virgin jungle and informed that this would be their area for staging while awaiting assignment to a task force. Naturally, after a few weeks aboard a troop transport with only salt water showers, the uppermost thought in each man's mind was a bath.

The author was in command of Battery C at the time. A short reconnaissance revealed the existence of a sizeable spring in the mountains about a half mile from the camp site. The big problem was, how to get that spring flowing into the camp. An unsuccessful attempt was made to obtain iron or fiberlite pipe from the Army Engineers. Then the commanding officer recalled reading about a pipeline constructed of bamboo in Timor, and decided to try duplicating this feat.

Two crews of eight men each were put to work on the pipeline. Prior to starting the project, the C.O. learned from the native "Fuzzytops" that the aerial roots of the pandan tree, also known as pandanus or screw pine, are easier to hollow out than bamboo, so the latter was substituted.

When troops in New Guinea wanted water, they built a pipeline of hollowed-out sections of the pandan tree, also called screw pine

The work progressed much more rapidly than expected. While one crew hollowed the pipe and distributed it along the line, the other constructed the supports and fitted the joints together. Each joint was fitted with great care, sealed with coal tar pitch, and wrapped with creosoted burlap. Two additional obstacles encountered were a sharp curve around the shoulder of a mountain and having to cross a road with a 12-foot clearance. The former was solved by selecting short joints of naturally curved pipe with the correct degree of curvature to meet the requirements.

Within two weeks after landing, the half mile of line was complete and the men of Battery C were having cool, refreshing showers, no small luxury after a day in the steaming jungle. The line was later extended to supply water for the entire 224th Battalion.

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COSTS ARE OFTEN CUT 50%, WITH THE SEAMAN

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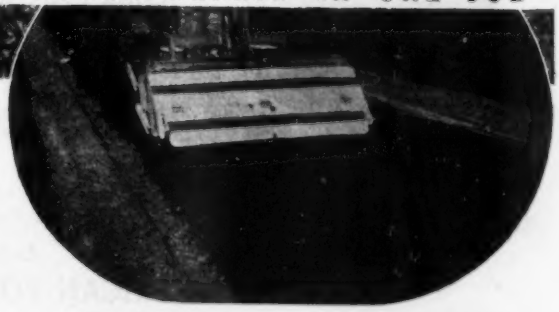

Less mixing time, — fewer passes to attain specified standards, less labor and a superior mix . . . Those are the elements that mean savings so substantial that the original investment in your SEAMAN MIXER is often repaid within a few weeks of the time it starts to work. And just as one benefit of many — in a bituminous mix, — there's nothing like the SEAMAN to eliminate troublesome rich and lean spots and to put fines in position, for the "carry" from one area to another of completely mixed materials within the hood of the machine, — produces an immediate, unvarying average and a stronger test.

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Awards for July Questionnaire

G. E. JACKSON, forester of Washington, North Carolina, has been awarded a $25 War Bond for submitting the best reply to the questionnaire published in the July issue of AMERICAN FORESTS. The purpose of this and subsequent questionnaires is to develop ideas and suggestions as to how AMERICAN FORESTS can be more helpful to its readers.

Suggestions submitted by Willard L. Hagen, a college student of San Luis Obispo, California, and James Wart of Baldwins Ville, New York, received honorable mention.

A number of outstanding letters were received as a result of the July questionnaire and the judges desire to give special mention to one sent in by 15-year-old John Richard Getz of Lansdale, Pennsylvania. Mr. Getz made a number of valuable suggestions for strengthening the influence of the Association among younger people.

Awards for the best replies to the questionnaires in the August and September issues will be made shortly after September 30 for August, and October 31 for September.

GOOD BOOKS ARE WELCOME AT CHRISTMAS

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This volume presents the story of America's natural resources in picture and in story. It emphasizes the part they have played in the development of the nation, the manner and consequences of their use, and the spread of the conservation movement from its beginning in the United States down to the present time. Size 12 x 8¾". 160 pages.

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TURKEY WINDBREAK

By J. Whitney Floyd

THE expression "talk turkey" is quite common, and if turkeys could talk they would be everlastingly grateful for the trees that farmers plant for their protection.

A case study of this comes from San Pete County, Utah. Chris Peterson, a well known Utah turkey grower, decided

Peterson inspecting trees in his windbreak after their first growing season

six years ago that his turkeys when pastured out in the field ought to have some protection. Trees were a quick and easy source of protection, so, at a cost of about $4.50, and with the advice and counsel of the Utah Extension Service, he obtained sufficient trees from the State-Federal Clarke-McNary Nursery at Logan to plant a two-row windbreak several hundred yards long. Peterson gave the same care to the trees—a row each of black locust and Russian olive—that he gives his turkeys. And the trees grew into a fine windbreak, making a splendid canopy, protecting his turkeys from sun, wind and rain.

But the pay-off came last year when in this particular windbreak field Peterson kept nearly 3,000 fine young turkeys worth $4 each on the hoof. He was off to lunch one day when he saw a blitzkreig storm coming up — a hailstorm. Rushing back to his turkey pasture, he got there just in time to see the damage the storm did. Two thousand

The dog with the "choke-bored" nose

A MAN we know has the most quail-crazy pointer we've ever seen. She has a nose that reaches out like a choke-bored gun. One day we saw that dog stop dead on a point astride an old rail fence, a bird still in her mouth. No wonder she's called the dog with the "choke-bored" nose.

Perhaps soon we can again supply sportsmen with Remington shotguns and rifles, Remington Express and Shur Shot shells, Remington Hi-Speed 22's with Kleanbore priming, and Remington big game cartridges with soft-point Core-Lokt bullets. Right now we're making military materiel. For a free color enlargement of this painting, write to *Remington Arms Company, Inc., Dept. G-11, Bridgeport 2, Conn.*

Remington Model 31 pump action repeating shotgun, and Remington Shur Shot shells.

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turkeys reached the shelter of the two rows of trees and were "talking turkey" to him—thanking him for the trees. Seven hundred did not make the windbreak and perished. "That windbreak saved me $8,000," Peterson said.

Recently elected president of the Utah Turkey Growers Association, he is talking plenty of turkey windbreaks to his associates.

CONSERVATION CALENDAR

Important Bills in Congress With Action
July 15-October 16, 1945

General

H. J. Res. 225—To quiet the titles of the states to lands beneath tidewaters and navigable waters within the boundaries of such states. Referred to the Committee on Judiciary, which reported favorably July 17 on passage of the legislation.

Public Lands

H. R. 4065—BENNETT—Authorizing reorganization of the General Land Office and providing that that office be the central source of information and of title records of all lands belonging to the United States. Referred to the Committee on Public Lands, September 14.

S. 1156—HATCH AND CHAVEZ—To make a grant of 10 million acres of public lands to the state of New Mexico. (The bill would include grazing districts as public lands.) Referred to Committee on Public Lands and Surveys, June 15.

S. 1402—MCCARRAN—Providing that upon petition signed by at least 60 percent of the qualified users of any grazing district, the Secretary of Interior shall cause such district to be dissolved and thereafter the lands may be available for leasing. Referred to the Committee on Public Lands and Surveys, September 18.

S. 1461—HATCH—To authorize the Secretary of Interior to lease certain public lands in Alaska for agriculture, industry and commercial use in tracts not to exceed 160 acres. Referred to Committee on Public Lands and Surveys, October 3.

State and National Parks

H. R. 4395—PETERSON— To provide federal aid to the states in the acquisition and development of state parks. Referred to Committee on Public Lands, October 16.

H. R. 3865—PETERSON—Authorizing the Secretary of Interior to acquire by exchange private lands within the national parks and other areas under administration by the national park service. Referred to Committee on Public Lands, July 20.

Research

S. 1285—MAGNUSON—To provide for the establishment of a national research foundation by the federal government to promote the progress of science and useful arts in order to secure the national defense and to advance national health, prosperity and welfare. Referred to the Committee on Commerce, July 19. (Committee hearings held in October.)

Pending bills having similar objects:

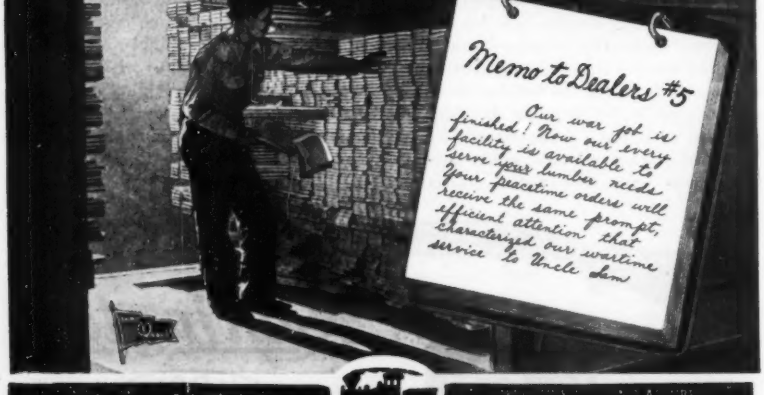
S. 1297—KILGORE.

S. 1248—FULBRIGHT.

Control of Stream Pollution

H. R. 3972—BAILEY—To encourage the prevention of stream pollution by allowing the amounts paid for plants for the treatment of industrial waste as a deduction in computing net income. Referred to Committee on Ways and Means, September 10.

H. R. 4070—SPENCE (S. 1462—BARKLEY)—To provide for water pollution control activities in the United States Public Health Service. Referred to Committee on Rivers and Harbors, September 14.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State Foresters Elect Goodyear

THE Association of State Foresters, meeting in St. Louis on October 11, elected T. S. Goodyear, state forester of Washington, president for the coming year. Joseph F. Kaylor, state forester of Maryland, was elected vice-president, and Missouri's state forester, George O. White, was elected secretary-treasurer.

Named to the executive committee, along with the three elected officers, were past president Perry H. Merrill, state forester of Vermont, and Fred H. Lang, state forester of Arkansas.

Resolutions and other action taken by state foresters at their twenty-third annual meeting will be presented in the December issue.

House Committee Approves O. & C. Bill

THE House Committee on Public Lands on October 22 approved legislation as written in H. R. 2593 which would shift administration over 462,000 acres of public forest lands from the Department of Agriculture to the Department of the Interior. The Committee's action is another episode in the seesaw fight over the lands in question which has been going on between the two departments for several years. The lands are unsurveyed odd numbered sections in the Congressional grant of 1866 to the Oregon and California Railroad Company which grant was cancelled by Congress in 1916. Lands undisposed of at that time by the railroad were revested in the United States. In 1937 Congress passed an act placing them under sustained yield forest management by the Interior Department.

Included in the indemnity strip specified by the original grant were many unsurveyed sections included in national forests under the administration of the U. S. Forest Service. Whether these sections, aggregating 462,000 acres, were actually part of the revested O. & C. lands became a moot question in 1940 when Secretary Ickes laid claim to them. The Forest Service contends they are and always have been part and parcel of the national forests. Extended hearings have been held by the Public Lands Committees of both House and Senate for several years with no final action being taken by Congress.

H. R. 2593, as now reported favorably by the House Committee on Public Lands, provides that (1) administration of the 462,000 acres in controversy shall be transferred to the Department of the Interior; (2) the Secretaries of Agriculture and Interior shall exchange O. & C. and national forest lands "of approximately equal aggregate value" in order to block them up to facilitate administration; and (3) to open O. & C. lands (except where valuable for power-sites) to exploration, location, entry and disposition under the mineral land laws of the United States.

A companion bill, S. 723, is pending in the Senate. If the bill in its House form becomes law, it will enrich eighteen counties of Oregon, in that O. & C. lands reimburse the counties in which they are situated with 50 percent of the receipts from the sale of timber. Income to local counties will be increased to 75 percent when certain federal obligations are liquidated. This is in contrast to 25 percent paid to counties by national forest lands.

How to Kill a Wilderness

(*From page* 551)

have to be repeated to destroy it utterly. Now you have a newly accessible region that just cries for development. Jobs will be created. The scarlet of the pentstemon, which could only be seen by day, can give way to the day-and-night vermilion of neon. And you can root out that resource of Sitka spruce. There is no point in seeking a substitute, and in saving any of it for a day when the need may be greater.

2. Rely always on the apparently democratic argument that you must produce the greatest good for the greatest number. Chances are no man will call to your attention that irreplaceable treasures are destroyed if they are divided or trampled—that no one would think of cutting into little bits, so that all could enjoy them, Michaelangelo's frescoes in the Sistine Chapel. And obviously, you can tell him, the wilderness is very big, there still being one place in California where you can be more than a day's travel from a roadhead, and there isn't much harm that can be done it that will be noticeable in his lifetime.

But don't let him ask you what his children, and theirs, are going to do when they want to see for themselves how wild places used to look before man decided to help God keep them.—*Reprinted from the "Sierra Club Bulletin" for August.*

FORESTER *Sight Compass*

by LEUPOLD

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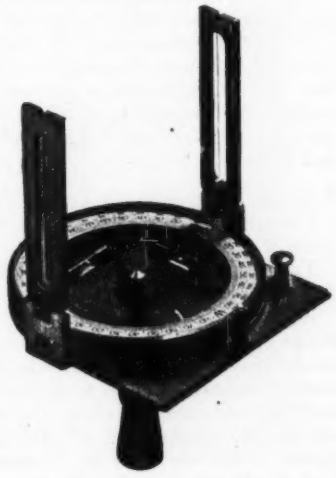
Engineers, geologists, and foresters who need a superior quality sight compass in their work will look far to find an instrument comparable to this Leupold product.



Made of Zamack. Base is ground flat with one straight-edge, beveled and graduated to ¼ inch, for plane table work . . . Equipped with ball and socket joint for use with jacob staff . . . Hand-sewed leather case . . . Improved method for setting off magnetic variation. Vertical angle scales in either percent, degrees or topographic and a horizontal vernier reading to 5 minutes are supplemental accessories.

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I PLANTED TREES, by Richard St. Barbe Baker. Published by Lutterworth Press, London, England. 256 pages, illus. Price, $2.10.

Forestry the world over, from California to Ceylon, from Kenya to Scotland, is the main theme of this roving Englishman's account of his life-long interest in trees. On the world-wide forest situation, he is well qualified to speak. To his sound economics, he adds an infectious enthusiasm for his life work.

SOILS AND FERTILIZERS, by Firman E. Bear, Ph.D. Published by John Wiley and Sons, Inc., New York, N. Y. 374 pages, illustrated. Price $3.50.

Intended to acquaint students with applications of scientific facts and principles of soil management, this book will be useful to many who are not in college but have had enough experience and training to be familiar with the vocabularies of chemistry, botany, physics and geology.

NATURAL PRINCIPLES OF LAND USE, by Edward H. Graham. Published by the Oxford University Press, New York. 274 pages, illustrated. Price, $3.50.

Ways in which a knowledge of living things can be profitably applied to the management of land are set forth in this book. Emphasis is given to the value of applying biological principles and methods to the management of farm land, forests, range and wildlife. Systems of land classification are described; a practical scheme is outlined which determines the uses for which particular parcels of land are best adapted; many instances of misuse of land are also described; streams and ponds are discussed; a final chapter deals with the relation of land use to human welfare, culture and society.

VENETIAN ADVENTURER, by Henry H. Hart. Published by Stanford University Press, Stanford University, California. 284 pages, illustrated. Price $3.50.

In this book the author has successfully lifted Marco Polo out of the mass of dusty documents that have too long dimmed the vivid color of his personality. Where hitherto he has been a mere writer of a rather dull travel chronicle, in the pages of this book he emerges as boy, man, husband and father.

Those who enjoy stories of medieval life will find here the full charm such tales contain. Descriptions of ancient cities, accounts of the lives and loves of those inhabiting them, portrayals of the mountains, forests and waters that have long lured travelers,—all enrich the pages.

BOOK NEWS

A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

COOKING WILD GAME, by Frank G. Ashbrook and Edna N. Sater. Orange Judd Publishing Company, Inc., New York, N. Y., 358 pages, illus. Price, $4.00.

Interest in wild game as a source of food has received an impetus from the war shortages. Fortunately, there has been an increased amount of game available due to the excellent work of the national and state wildlife services.

Therefore, this book by two members of the U. S. Fish and Wildlife Service, Department of Interior, is both useful and timely. The 432 recipes thoroughly cover the subject and are well presented and enlivened with bits of outdoor lore.

For the sportsman or the sportsman's wife, it is indispensable.

EENY, MEENY, MINEY, MO—AND STILL—MO, by Sam Campbell. Published by the Bobbs-Merrill Company, Indianapolis 7, Indiana. 237 pages, illustrated. Price, $2.00.

To everyone who has read of *Inky*, and *Salt and Pepper*, in their home—*The Sanctuary*—in the North Woods, this new book by Sam Campbell, introducing four baby squirrels will be welcomed and avidly read. These orphaned imps—named in the title of the book—serve with their appealing antics and lovable ways to bring healing to the heart and mind of a wounded soldier who, too, had sought sanctuary in the woods. A human story of real people—and animals—humanly told.

EDIBLE WILD PLANTS OF EASTERN NORTH AMERICA, by Merrit Lyndon Fernald and Alfred Charles Kinsey. Published by the Idlewild Press, Cornwall-on-Hudson, New York. 452 pages, illustrated. Price, $3.00.

Fields, seashores and woods are full of good wild vegetables for those who know about them. To assist the novice in learning what these are, how to find and recognize them and what satisfying food they make, this book discusses more than 1,000 kinds of wild plants fit for food. The most important ones are illustrated. The experience of hunters for new foods for three centuries are fully stated. The wild foods of the American Indians, the Europeans, the Chinese and pioneer explorers in all north-temperate regions are summarized.

SMOKE JUMPER, by Marjorie Hill Allee. Published by Houghton Mifflin Company, Boston, Massachusetts. 160 pages, illustrated. Price, $2.00.

This is a story of the fire-fighters of the U. S. Forest Service; specifically, of those men who parachute into otherwise inaccessible areas to quell forest fires. In a fast-moving style which will appeal to young readers, the author covers a period of intense excitement, danger and adventure in the life of a teen-age boy who is spending a summer rendering himself helpful in this relatively new branch of the Forest Service.

PASTORAL DAYS, by Mary Louisa Hellings. Published by the author, privately, at Titusville, New Jersey. 67 pages, illustrated. Price, $2.25.

This delightful collection of nature poems from the pen of its gifted author will be welcomed by all who have enjoyed her writings for years. Here her usual inspirational and somewhat classic style is joined with gay and free abandon in simple poetic expression. Since 1930 she has been writing on varying aspects of nature in prose and poem, and this little book crowns her contributions.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Shear Strength of Glue Joints, by John W. Maxwell. Tech. Pub. No. 64, New York State College of Forestry, Syracuse University, Syracuse, N. Y.

New Jobs in Our Town. Published by National Lumber Manufacturers Assn., 1319 18th St., Wash., D. C.

Wild Flower Conservation, by P. L. Ricker. Wild Flower Preservation Soc., Wash., D. C.

South Carolina Forest Growth and Drain 1936-43. By Thomas Lotti and Arthur S. Todd, Jr. For. Surv. Release No. 20. For. Serv., U.S.D.A. Appalachian For. Expt. Sta., Asheville, N. C.

Better Management on Southern Coastal Forest Ranges. Forest Service, U. S.D.A. Supt. of Docs., Wash., D. C.

Wetwood of Elms, by J. Cedric Carter. Reported in the *Bulletin of the Illinois Natural History Survey Division*, Urbana, Ill.

Propagation and Distribution of Food Fishes, by M. C. James, O. Lloyd Meehan and E. J. Douglass. Statistical Digest 12, Fish and Wildlife Serv., U. S. Dept. Int., Supt. of Docs., Wash., D. C. Price, 10 cents.

The Protection of Migratory Birds—a consolidation of the Migratory Birds Convention Act and Federal Regulations. Dept. of Mines and Resources. Ottawa, Can.

Fire Control Pays

Remarkable progress has been made in state forest fire control in the Lake States during the last 15 years, according to the Lake States Forest Experiment Station. This is borne out by the reduction in number of fires, area burned, size of average fire and the annual fire loss for each succeeding five-year period. Although the good record for the most recent period (1940-44) has been in part a result of favorable weather conditions, most of the improvement can be ascribed to better financed and better organized state fire control. Reductions of 67 percent in the number of fires occurring annually, 92 percent in the area burned, 77 percent in the size of the average fire, and 90 percent in the average annual loss have occurred since 1930 on state-protected lands in the Lake States.

Although some 2,800 fires still burn about 65,000 acres annually, the risk of burning has been reduced over 13 times, or from 1.74 to 0.13 percent of the area protected. This improvement in protection has made timber growing more feasible and forest property an insurable risk. Presuppression expenditures have gone up 63 percent since 1930, but suppression costs have been reduced 80 percent. As a result, the net overall cost of fire control has increased less than 14 percent while the overall cost-plus-loss has been cut 40 percent.

The Governor's Trees

(*From page* 553)

timbers were supplied Rockford machine tool companies—one of which was awarded the Army-Navy "E." Sinnisippi lumber was used for boxing war materials going to China, Russia and England.

According to George E. McClaren, farm superintendent, approximately 200 cords of wood have been used each winter on the estate for heating purposes. This is equivalent to about 200 short tons of bituminous coal, or 40,000 gallons of fuel oil.

Forest products from Sinnissippi Farm represent but a small part of the estate's income. Mr. Lowden's chief interest, however, was in trees rather than grain and livestock. And his plans for the future of his forest were passed on to his three daughters, Mrs. C. Phillip Miller and Mrs. Albert Madlener, Jr., of Chicago, and Mrs. F. P. Wierdsma of New York, who now direct the activities of the farm.

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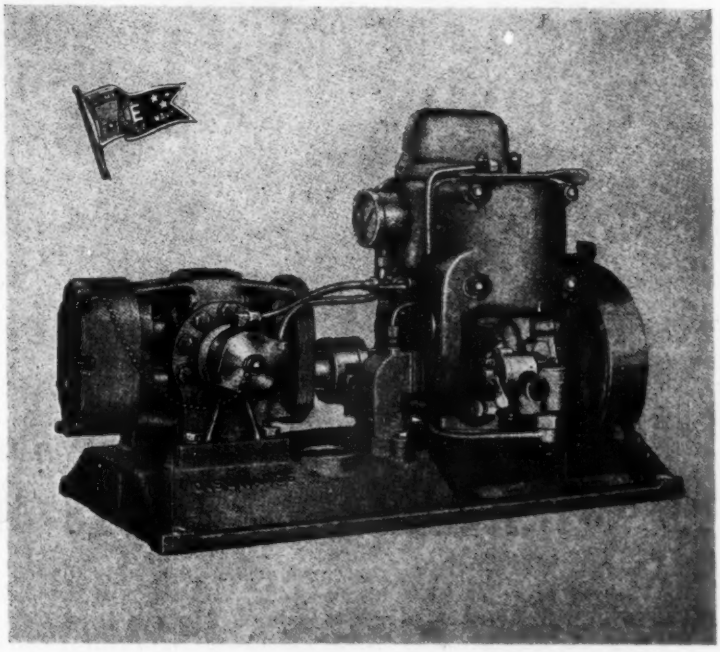

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11-45

Crossties

(*From page* 550)

have 704,000,000 feet additional, and the State owns approximately 145,000,000 board feet. About 80 percent of private and State timber is now operable.

National forest timber is about half lodgepole pine, one-third Engelmann spruce, 10 percent Douglasfir and 14 percent ponderosa pine. Other, minor species such as five-needled pines and true firs are present in small volume.

Traditionally most commercial logging and manufacture concentrates upon railway crossties, with lumber secondary. Time was when the tie-hackers

An old timber broad-ax expert hews crossties from lodgepole pine trees

spent their days swinging the broad-ax, but now the logs are loaded upon trucks and hauled to portable mills to be sawn. Ties are still transported from woods to railway by driving in several of the swiftly flowing streams. Production is fairly general across the state and the principal species marketed is lodegpole pine. Western yellow pine holds second place. A few thousand feet of Engelmann spruce and Douglasfir also are cut.

The general picture of Wyoming forestry is one of watershed protection and recreation holding predominant places, but with timber production important for local consumption. Ownership is such that overcutting does not constitute a serious threat. However it is likely that species distribution will

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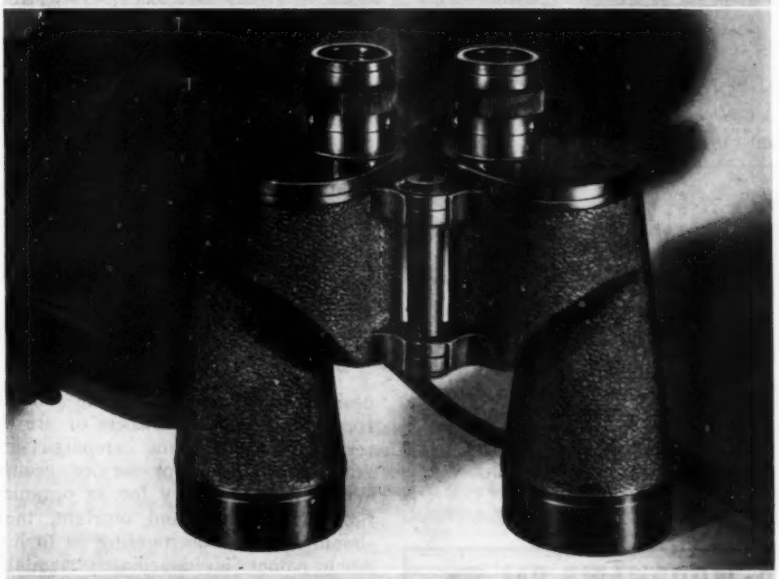

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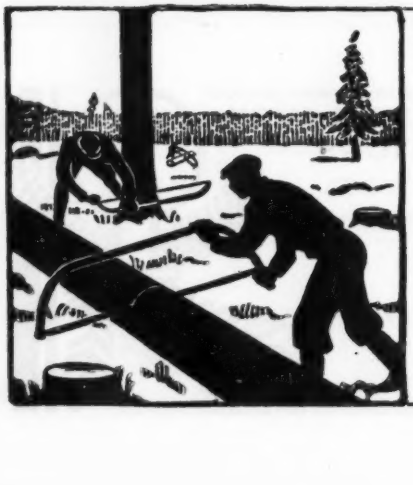

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shift toward heavier use of spruce and less reliance upon the none too plentiful ponderosa pine.

Field work for this report was done in late 1944 under direction of J. Lee Deen, with the author assisting. Acknowledgment is made of assistance given by Regional Office, U. S. Forest Service, Denver; Soil Conservation Service, Grazing Service, Rawlins; National Park Service, Indian Service, state and county officials and many private forest owners and timber operators. — EDITOR'S NOTE.

Forest Exchange

(*From page* 524)

be salesmen of ideas, not just salesmen of timber. There is plenty of evidence of the nature of education in use of the woods. Your publication has done much to inform people. Others, by demonstration on the ground, have made people realize what proper handling of woods meant to them.

My own lecture work has resulted in people planting trees or establishing school and community forests.

But the need of education is more universal than what I and others have done individually. Every man, woman and child must know about forestry in *all* of its phases, including wildlife management and recreation. Conservation must be integrated into *all* courses of study in *every grade* and the *high school.*— *H. N. Wheeler,* Washington, D. C.

Memorial Forest

(*From page* 542)

desired, whether they come directly from public spirited owners or are the result of money-raising campaigns and purchase by civic or service groups. Where it is necessary for an organization to purchase land outright, there should be an understanding as to how much money is immediately available and what the prospects of meeting future commitments on time purchases or for additions are. Further there should be assurance that the property to be acquired is worth the proposed price and that the elements of value are such as to make it useful as a memorial forest.

By way of explanation, desirable elements of value in a city park might be: accessibility or central situation, transportation facilities, adequate water for domestic use and fire protection, suitability of soil for tree growing or presence of trees upon the land. In an out-of-town property the elements of value might include all those mentioned above, plus the timber growth, and the value of timber might be a large part of the total value. In any case, experienced persons who know values should pass upon proposed purchases.

Establishing the Forest

Presumably the first or acquisition phase will culminate in securing all or part of the proposed memorial forest and turning the property over, with appropriate ceremonies, to the community which it is to benefit.

It is even conceivable that the land committee may continue to function thereafter, and that additions may be made as a result of their activities. Or the Board of Managers may assume the responsibility of making later additions.

Having decided upon the general purposes which the property is to serve, as for example: (a) public playgrounds and recreation area, with forestry subordinated, or (b) timber production and recreation without special play facilities, the management sets up a plan of protection, development and use. Protection against forest fires should be given special consideration. A detailed map of the property should be made as a basis for planning. For permanent records it is desirable to have maps of the area as it was before any improvements, maps of proposed changes, and periodically-made maps of the area "as is." Thus the Board of Managers can show the progress made.

The development program should be set forth with a time schedule to be followed so far as possible. Regulations for use and occupancy should be formulated, publicized, posted and enforced. Management plans covering lease or sale of wood or other values should be set up in general terms, yet allowing flexibility to meet changing conditions. In case of a very large proj-

ect the Board may decide to employ a forester to manage the forest. With smaller projects it is desirable, and should be possible, to secure the services of a local forester, from federal, state or private sources, who would become a permanent member of the board.

Principles governing sound handling of forests are not too difficult to be learned in a short time by any interested person. However, since there are foresters in or near every large town and many small ones, it is recommended that groups undertaking establishment of memorial forests look about and enlist the aid of such men. The public service standards of the profession are such as to guarantee aid will be forthcoming.

Europe's Lumber

(*From page* 534)

can probably use all of the lumber produced within her present boundaries as well as supplies received from other countries now under her control or as reparations.

Will she do this? Or will she decide to dispose of large quantities to obtain foreign exchange for other commodities she considers more essential? On the answer to this question depends to a large degree whether the countries of Europe will obtain all of their immediate lumber needs, and also whether and how soon the world timber supply will balance demand. Russia will probably export some timber from the Murmansk and White Sea areas because of the difficulty and length of transportation to the domestic localities where it is needed. However, this will only be a fraction of prewar exports, probably not exceeding 33 percent.

A great deal has been said about the possibility of meeting world shortages from the extensive tropical forests existing in Africa, Latin America and the East Indies. These forests are extensive but lack of transportation and inaccessibility will not permit large increases of timber to the world markets in time to meet the prospective shortage.

What of the future? With such a sketchy outline of the postwar situation as it is possible to put together today, does one dare make predictions? If one forgets Russia and what she may do, there is a prospective world shortage which will probably extend through the next three to five years. It will not be perpetual because if supplies are not available man has a habit of turning to other materials to meet his needs until supply and demand for the scarce article again come into balance.

In general, it may be said that no serious damage has been done to the

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forest resources of Europe that cannot be repaired by skillful management in two or three decades. The British have a program of reforestation far more extensive than that undertaken after the last war. They, at least, have learned their dependence on wood as vital to the defense of the tight little island. It is hoped that other countries will follow suit and that there will be general recognition of the necessity of forest management and reforestation of idle lands so that never again will the world be faced, as it may be today, with a world shortage of a renewable resource which is within man's power to restore.

Wildlife and Democracy

(*From page* 531)

"Thy wee bit housie, too, in ruin!
Its silly wa's the win's are strewin'!
An' naething, now, to big a new ane
O' foggage green!
An' bleak December's winds ensuin',
Baith snell and keen."

The last, the fourth stanza, is included chiefly because it epitomizes admirably man's whole relationship with wildlife, and particularly his unwitting and ignorant destruction of nesting and breeding grounds for the sake of plowlands. But, particularly, observe the first two verses of the second stanza. These suggest that the dominion man holds over wildlife, or his proprietorship over wildlife, is fundamentally an error; that man and animals actually form a social union which most of mankind habitually violates. These ideas may be tenable only in poetic sentiments, of course, but I shall defend them with a reminder that the greatest truths are generally expressed in poetry.

If we drop these poetical ideas and return to the world as it is, we find a huge wall of ignorance and false human dignity dividing man from the remainder of the animal world; and on one side of the wall flourishes a philosophy responsible for such phrases as "man's conquest of Nature," "man's mastery of the world," and other expressions of human grandeur. These lofty ideas and the Mosaic philosophy of man's dominion over other animals have persisted for centuries. They have led inescapably to despoliation of forests, to pollution of streams, destruction of nesting sites and spawning grounds, and to the clearing of natural habitats of all but a remnant of their former wildlife inhabitants. If we are to preserve any but the sorriest relic of our wildlife, we shall be required to drop our paranoic views toward other animate creatures, to recognize "nature's social union," and to accept in that union a rank having less grandeur but fewer retributions than we have previously suffered.

We shall further be required to acknowledge our ignorance of wildlife and humbly to learn at least the basic facts of its economy. Finally, our game laws which are now only negative and restraining must be supported by a public conscience which gives wildlife a status above property, protecting the animal world by a system which is ethical as well as legal.

AUTHORS and PHOTO CREDITS

WILLIAM H. BAYLIFF (*Democracy and Wildlife*) is Executive Secretary of the Board of Natural Resources of Maryland. ARTHUR BEVAN (*Where Will Europe Get Its Lumber?*) recently returned from London where he represented the Foreign Economic Administration at the International Timber Conference which studied the timber problem in Europe. WILLIAM M. HARLOW (*Jack Pine*) is a member of the faculty of the New York State College of Forestry, Syracuse. J. C. H. ROBERTSON (*Water, Scenery and Crossties*) is Associate Professor of Forest Management at the University of Washington and until August of this year was regional consultant on the Forest Resource Appraisal. CHARLES S. WALTERS (*The Governor Planted Trees*) is Project Forester of the Peoria Wartime Timber Marketing Project. H. G. WILM (*Mountain Water for Thirsty Lands*) is with the Rocky Mountain Forest and Range Experiment Station. John B. Woods (*Maple Sugar or Maple Logs?*) is Director of the Forest Resource Appraisal.

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Soil Conservation Service—pages 548 and 549.
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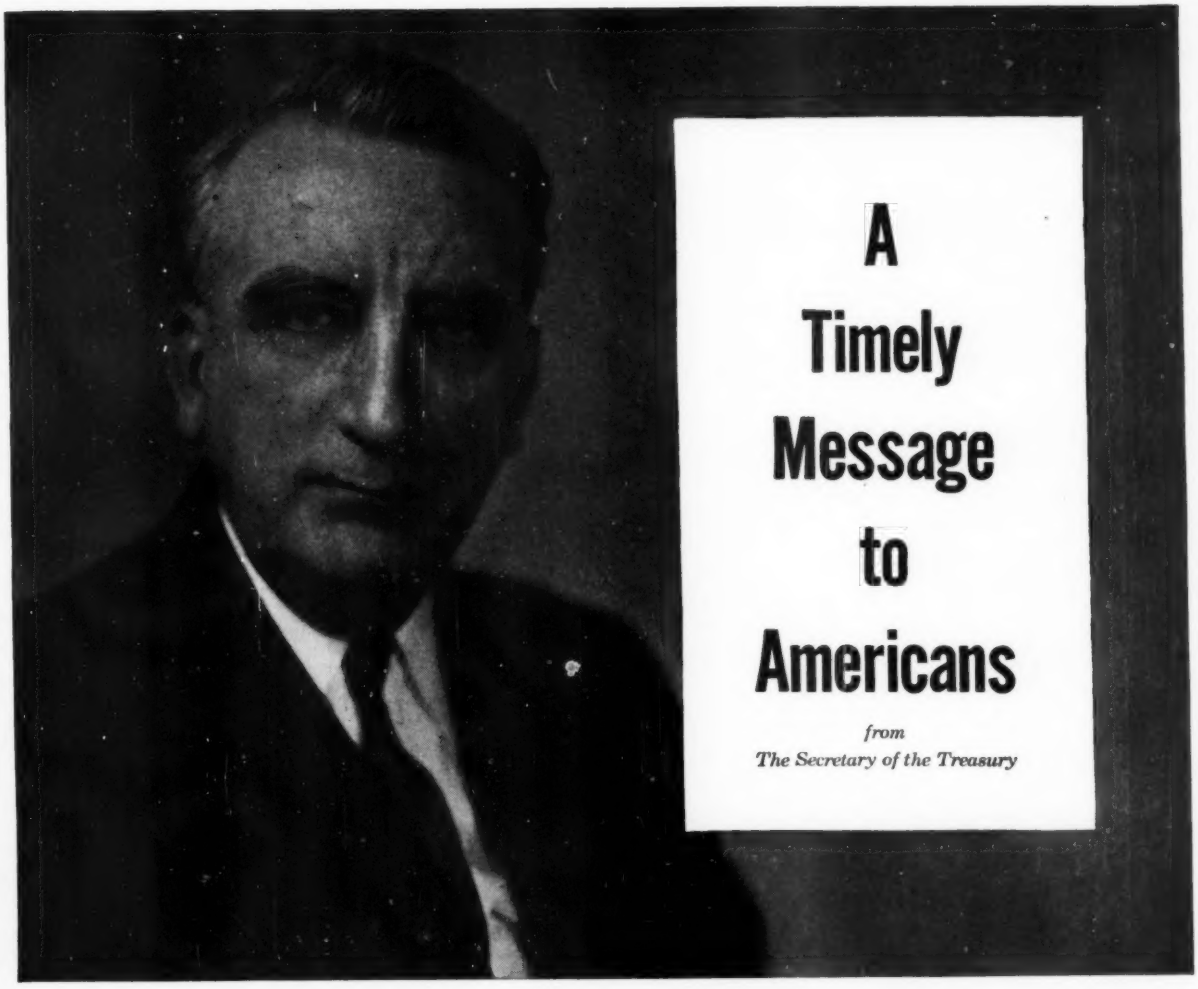

A Timely Message to Americans

from
The Secretary of the Treasury

America has much to be thankful for.

Abroad we have overcome enemies whose strength not long ago sent a shudder of fear throughout the world.

At home we have checked an enemy that would have impaired our economy and our American way of life. That enemy was inflation—runaway prices.

The credit for this achievement, like the credit for military victory, belongs to the people.

You—the individual American citizen—have kept our economy strong in the face of the greatest inflationary threat this nation ever faced.

You did it by simple, everyday acts of good citizenship.

You put, on the average, nearly one-fourth of your income into War Bonds and other savings. The 85,000,000 owners of War Bonds not only helped pay the costs of war, but also contributed greatly to a stable, prosperous postwar nation.

You, the individual American citizen, also helped by cooperation with rationing, price and wage controls, by exercising restraint in your buying and by accepting high wartime taxes.

All those things relieved the pressure on prices.

THE TASK AHEAD

We now set our faces toward this future: a prosperous, stable postwar America—an America with jobs and an opportunity for all.

To achieve this we must steer a firm course between an inflationary price rise such as followed World War I and a deflation that might mean prolonged unemployment. Prices rose more sharply after the last war than they did during the conflict and paved the way for the depression that followed—a depression which meant unemployment, business failures and farm foreclosures for many.

Today *you* can help steer our course toward a prosperous America:

—by buying all the Victory Bonds you can afford *and by holding on to the War Bonds you now have*

—by cooperating with such price, rationing and other controls as may be necessary for a while longer

—by continuing to exercise patience and good sense with high faith in our future.

The challenge to America of switching from war to peace with a minimum of clashing gears is a big one.

But it is a small one compared to the tasks this nation has accomplished since Sunday, December 7, 1941.

Fred M. Vinson
Secretary of the Treasury

A Government message prepared by the War Advertising Council and contributed by this magazine in cooperation with the Magazine Publishers of America.

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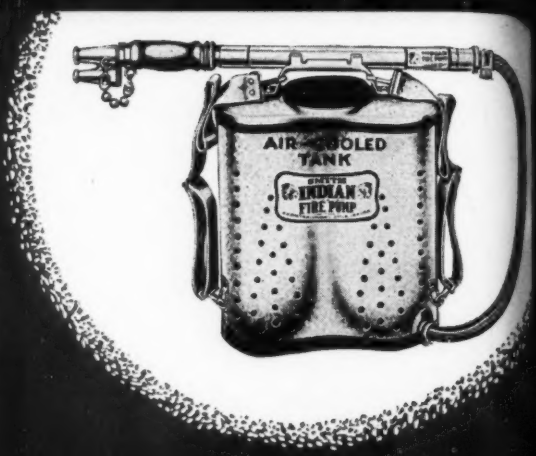
for

INDIAN FIRE PUMPS



FORWARD

As if going in
battle area
squad of sol
equipped w
INDIAN FI
PUMPS move
to fight Ore
largest forest
The Army
Navy are big
of INDIAN
PUMPS.

The war with fire will never end and INDIAN FIRE PUMPS will alway
have a job of fire fighting to do quickly, efficiently and economically. Thes
famous, clear water, portable extinguishers carry slung on the back an
go right into the heat of the battle. Adjustable nozzle will throw stream o
coarse or fog-mist spray. INDIAN FIRE PUMPS can always be depende
upon to put out forest, grass, grain, field and building fires before the
spread. Thousands are in use by foresters, fire departments, lumbermen
industrial plants and many others. Send for catalog.

FOR INSIDE AND OUTSIDE FIRES USE

INDIAN

Clear Water

FIRE PUMPS

D. B. SMITH & CO. UTICA, N. Y.